The Library of Congress
Central Serial Record
Received
JAN 6 1942
Copy
34652

NOVEMBER 8, 1941

1440

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.
Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XIX. OF VOL. II., 1941. LONDON, SATURDAY, NOVEMBER 8, 1941 Pp. 72—Price 1s.
No. 6167. VOL. CCXLI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS

SEE PAGE 4

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
Revista de Libros: "This book is the best clinical treatise which we possess to-day on the pathology of the thyroid. . . . The excellence of the text is generally enhanced by the illustrations."
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

ANATOMY IN THE LIVING MODEL.
By DAVID WATERSTON, M.A., M.D., F.R.C.S.E., F.R.S.E.,
Bute Professor of Anatomy at the University of St. Andrews.
276 pages. 74 Illustrations. 16 Coloured Plates. Price 15s. net, postage 9d.
". . . can be read and re-read by the student, general practitioner, the surgeon and physician."
ST. BARTHOLOMEW'S HOSP. JOUR.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

LANCET WAR PRIMER
WOUND INFECTION
Edited by W. H. OGILVIE
96 pp. 2s. 6d. net Plus 3d. postage
The Lancet Ltd., 7, Adam-street, Adelphi, W.C.2.

In Two Volumes. SELECTED WRITINGS OF
JOHN HUGHLINGS JACKSON,
M.D., F.R.C.P., F.R.S.
I.—EPILEPSY AND EPILEPTIFORM CONVULSIONS.
II.—EVOLUTION AND DISSOLUTION OF THE NERVOUS SYSTEM: SPEECH: VARIOUS PAPERS: ADDRESSES AND LECTURES.
Edited by JAMES TAYLOR, M.D., F.R.C.P.
With the advice and assistance of GORDON HOLMES, M.D., F.R.C.P., and F. M. R. WALSHE, M.D., F.R.C.P.
Over 500 pages in each vol. Price 25s. net each; postage extra (inland 9d., abroad 10d.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

THE CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.
Vols. I and II. Price 10s. 6d. each. Postage extra.
Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."
Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.
"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO."
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

SAUNDERS'
RECENTLY NEW BOOK
See Advertising Page 3.

RADIOTHERAPY IN THE DISEASES OF WOMEN.
By MACKENZIE DAVIDSON, B.A. (Cantab.), F.R.C.S. (Eng.). M.B., Ch.B. (Cantab.)
Physician Accoucheur with Charge of Out-patients, St. Bartholomew's Hospital; Consulting Gynæcologist, Royal Northern Hospital, &c.
Demy 8vo. 148 pages. 11 Illustrations in the Text; 2 Plates, one in Colour. Price 7s. 6d. net; postage 7d.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

RECTAL SURGERY
By W. ERNEST MILES, F.R.C.S., F.R.C.S.I., F.A.C.S.
"This book is without doubt the best that has so far been published on this important subject."
—MEDICAL PRESS AND CIRCULAR.
Cassell & Company Limited, La Belle Sauvage, E.C.

Pp. 328 + xii. 12s. 6d. net.
INTRODUCTION TO
DISEASES OF THE CHEST.
By JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

PROGNOSIS. VOLS. ONE AND TWO
Price 10s. 6d. each net (postage 7d. each extra).
Companion Volumes to the "Modern Technique in Treatment" and "Clinical Interpretation of Aids to Diagnosis" Series.
The 124 articles of the series have been collected in book form in two volumes, which are fully indexed under titles, authors, and broadly classified into groups to facilitate quick reference.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

PROBLEMS OF
ANÆSTHESIA
IN GENERAL PRACTICE
By D. H. LUKIS, M.D., B.S.Lond.,
Late Hon. Anæsthetist, South London Hospital; late Clinical Assistant, Ear, Nose, and Throat Department, Queen's Hospital for Children; Hon. Medical Officer, Kingston Victoria Hospital.
Demy 8vo. 7s. 6d. net (postage extra). 158 + vi pages.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

In Uniform with THE PHARMACOLOGY AND THERAPEUTICS OF THE MATERIA MEDICA
WALTER J. DILLING, M.B., Ch.B., and SAMUEL HALLAM, L.D.S.R.C.S. Eng.
DENTAL MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS
Crown 8vo. 368 pages. 13/6 *net*
An informative reference book upon which the chief actions and uses of the remedies which are of general interest to dental surgeons are based. Amongst the additions to this revised edition are new accounts of the sulphanilamides, antiseptic dyes, recent and buffered local anæsthetics, preparations, and of the analeptics—nikethamide, leptazol and picrotoxin.
CASSELL & CO. LTD., 210 HIGH HOLBORN, LONDON, W.C.1

Certainty of relief from ASTHMA

Means relaxation of BRONCHOSPASM

Felsol relaxes the spasm of plain muscle and gives immediate relief in all forms of Asthma

FELSOL POWDERS ARE FREE FROM MORPHIA OR OTHER NARCOTICS

BRITISH FELSOL COMPANY LTD.
Wigton House, 206/212, St. John Street, Clerkenwell - - - - - London, E.C.1

Telephone: Clerkenwell 5862

Telegrams: Felsol, Smith, London

NYLON SUTURES

PREPARED BY

EDINBURGH MERSONS SCOTLAND

NYLON Monofil is a Strong, Non-Absorbable Surface Suture; Uniform in Gauge, Pliable, Non-Capillary. Range Card and Prices on request from your Surgical Instrument Suppliers, or from G. F. MERSON LTD., EDINBURGH, 8.

YOU MAY BE INTERESTED TO KNOW

THAT SERVICE IS AVAILABLE, SECOND TO NONE, FOR LADIES, MEN, AND CHILDREN IN THE FOLLOWING DEPARTMENTS:—

READY TO WEAR
In this department is to be found one of the finest ranges of fittings and styles available to-day. No high heels for ladies and no court shoes.

BESPOKE
Fit is guaranteed. No extra charge is made for lasts. The finest shoes are made in this department and sent to customers all over the world.

SURGICAL
The most difficult cases are fitted with great care in full co-operation with the medical profession.

CORRECTIVE
All forms of correction, internal or external, are carried out to prescription on footwear of D & M make or other makes.

Footwear made to medical prescription is tax free and requires only two coupons.

REPAIRS
By correct repairing a good pair of shoes can be made to last for ever. Oak bark tanned butt leather is exclusively used.

DOWIE & MARSHALL LTD. BOOTMAKERS (EASY) SINCE 1824
16, GARRICK STREET, COVENT GARDEN, LONDON, W.C.2
TEMPLE BAR 5587

NOVEMBER 8, 1941

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6167 LONDON: SATURDAY, NOVEMBER 8, 1941 CCXLI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Renal Lesions in Two Cases of Crush Syndrome. Prof. J. SHAW DUNN, M.D., MARJORIE GILLESPIE, M.D., J. S. F. NIVEN, M.D. (*illus.*) ... 549

T.N.T. Jaundice. ROBERT M. EVANS, M.B. 552

Improved Webster Test for T.N.T. Derivative in Urine. JOHN INGHAM, F.I.C. ... 554

Trigeminal Neuralgia: A Suggested Basis of Treatment. W. E. ADAMS, M.B., WILLIAM ROBINSON, M.B. ... 555

Influence of Menstruation on Suspension Stability of Red Cells. RAYMOND GREENE, D.M. (*with chart*) ... 556

Concentrated Serum in Head Injuries. J. W. ALDREN TURNER, M.R.C.P. ... 557

Hæmothorax from Leakage of a Dissecting Aortic Aneurysm: Survival. FELIX POST, M.B. (*with diagram*) ... 558

Pterygo-nuchal Infantilism (Turner's Syndrome), with Post-mortem Findings. E. P. SHARPEY-SCHAFER, M.R.C.P. (*illus.*) 559

Cerebrospinal Fever with Low Blood-pressure. J. SHARKEY, M.D. ... 560

Postvaccinal and Measles Encephalomyelitis: Report on Two Cases which Recovered. A. H. G. BURTON, M.R.C.P., J. H. WEIR, M.D. ... 561

Encephalitis of Unknown Origin. Major H. A. PALMER, M.R.C.P. ... 562

Juvenile Delinquency in War-time: Report from the Bristol Child-guidance Clinic. F. H. BODMAN, M.D. M. I. DUNSDON, M.A. 572

MEDICAL SOCIETIES

ROYAL ACADEMY OF MEDICINE IN IRELAND: Water Deficiency ... 563

REVIEWS OF BOOKS

Surgery of the Heart. Major E. S. J. King, F.R.C.S. ... 564

What Price Alcohol? Robert S. Carroll, M.D. ... 564

LETTERS TO THE EDITOR

Ingrowing Toenail (Mr. W. Sayle Creer, F.R.C.S.) (*with diagrams*) ... 580

Ligation of the Patent Ductus Arteriosus (Mr. J. H. Mulvany, F.R.C.S.) 580

Calcium Studies in Normal People (Prof. J. T. Irving, M.D.) ... 580

"War-time Health and Democracy" (Dr. Hugh Clegg) ... 580

Plump Type of Graves's Disease (Dr. W. R. Trotter and Mr. K. C. Eden, F.R.C.S.) ... 581

Graduation at an Earlier Age (Mr. J. A. V. Bates) 581

The Hen as Middleman (Mr. E. T. Hainan) ... 581

Cancer and Oiling of Floors (Dr. Peter W. Edwards) 582

Prophylaxis and Treatment of Colds (Dr. W. Annandale Troup) ... 582

Towards a National Service in Clinical Pathology (Dr. Constant Ponder) .. 582

First-aid in War-time (Dr. G. C. F. Roe) ... 582

Q Camp (Dr. Marjorie Franklin) ... 582

Home Guard Terminology 582

LEADING ARTICLES

THE WARD DRESSING ... 565

ABSENT FROM WORK ... 566

MALARIA BROUGHT HOME 567

WHEN TO TIE THE CORD ... 568

ANNOTATIONS

Salt Water Surgeons ... 568

Local Anæsthesia in Delivery ... 569

Student and Screen ... 569

The Books Go Round ... 570

Tuberculosis in Dublin Children ... 570

Pneumococcal Meningitis .. 570

Estimation of Sulphonamides in the Blood ... 571

Cucumber Seeds and Clinical Medicine ... 571

Tuberculous Rheumatism 571

SPECIAL ARTICLES

Parallels in Nursing Problems ... 574

The Kidneys and Hypertension: Experimental Progress ... 575

War-time Nurseries Discussed ... 583

PUBLIC HEALTH

Future of the School Medical Service ... 577

From the Annual Reports: Chelsea — Eastbourne — Ramsgate ... 577

Infectious Disease in England and Wales ... 576

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents ... 578

Appointments ... 586

Births, Marriages and Deaths ... 584

OBITUARY

Surgeon Lieutenant Ralph Morton Calder, M.B. (*with portrait*) ... 584

George Alexander Cohen, M.B. ... 584

Surgeon Commander Robert Wallace Nesbitt, F.R.C.P.I. 584

MEDICAL NEWS

Royal College of Physicians of London ... 585

Royal College of Obstetricians and Gynæcologists ... 585

Association of Anæsthetists 585

National University of Ireland ... 585

North Western Tuberculosis Society ... 585

British Institute of Philosophy ... 585

Royal Institution ... 585

Pharmaceutical Society ... 585

Royal Society of Medicine .. 585

L.C.C. Vitamin Tests ... 585

Hostels for Old Age Pensioners ... 585

Medical Aid for China ... 585

Prisoners of War ... 586

Paddington Medical Society 586

Chadwick Lecture ... 586

Royal Faculty of Physicians and Surgeons of Glasgow ... 586

Alliance of Hospital Administrators ... 586

Notification of Tuberculosis 571

Nutrition in Ireland ... 576

NOTICES

To Radium Smallholders .. 586

Salazopyrin in Rheumatism 586

Books from the Argentine 586

Warner's Calendar of Medical History ... 586

American Doctors for Britain ... 584

Medicine ★ *Dynamic Volumes* ★ **Surgery**

DISEASES OF INFANCY AND CHILDHOOD
By WILFRID SHELDON, M.D., F.R.C.P., Physician for Diseases of Children, King's College Hospital; Physician to Out-patients, The Hospital for Sick Children, Great Ormond Street, London. *Third Edition.* 130 Text-figures and 14 Plates. **24s.**

PHYSICAL TREATMENT:
By Movement, Manipulation and Massage
By JAMES MENNELL, M.D., B.C., Consulting Physicotherapist and Lecturer, Massage Training School, St. Thomas's Hospital. *Fourth Edition.* 281 Illustrations. **25s.**

FORENSIC MEDICINE
By SYDNEY SMITH, M.D., F.R.C.P., Regius Professor of Forensic Medicine, University of Edinburgh. *Seventh Edition.* 179 Illustrations. **25s.**

A TEXTBOOK OF SURGICAL PATHOLOGY
By C. F. W. ILLINGWORTH, M.D., F.R.C.S.Ed., Regius Professor of Surgery, University of Glasgow; and B. M. DICK, M.B., F.R.C.S.Ed., Lecturer in Clinical Surgery, University of Edinburgh. *Fourth Edition.* 300 Illustrations. **38s.**

EDEN & HOLLAND'S MANUAL OF OBSTETRICS
By EARDLEY HOLLAND, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G., Obstetric and Gynæcological Surgeon, and Lecturer on Obstetrics and Gynæcology, The London Hospital. *Eighth Edition.* 12 Plates (5 Coloured) and 398 Text-figures. **25s.**

SURGICAL ANATOMY
By GRANT MASSIE, M.S., F.R.C.S., Surgeon, Guy's Hospital, and Lecturer in Operative Surgery, Guy's Hospital Medical School. *Fourth Edition.* 158 Illustrations, many in colour. **21s.**

J. & A. CHURCHILL LTD. 104 GLOUCESTER PLACE W.1

In the treatment of WOUNDS, BURNS & ULCERS by irrigation

WHY SODIUM HYPOCHLORITE?

Because as defined in the Lister Memorial Lecture, 1939, "... the best antiseptics are not those which in vitro have the greatest germicidal power, but those that have a powerful proteolytic action." It is this capacity by solvent action to remove dead or dying organic matter, aptly likened in the above lecture to that of a "chemical bistoury," which cleanses the lesion of débris and inflammatory products and prepares the way for healing. In this respect the efficiency of the hypochlorites is well recognised. By their powers of penetration they retain their rapidity of action and easy access to micro-organisms in the presence of body fluids and exudates, without material loss of germicidal efficiency, and so help to provide in the wound area the best conditions for control of infection, without hindrance to the process of healing.

WHY *ELECTROLYTIC* SODIUM HYPOCHLORITE?

Because, as Carrel and Dehelly first noted (The Treatment of Infected Wounds, 1918, p. 24), hypochlorite solutions prepared by the electrolytic method are less irritating to living tissues than the chemically prepared Dakin's solution. As produced by the Milton process, they have in further contrast the great advantage of stability, retaining even after long storage their full strength and germicidal power, whereas these are progressively lost by most forms of the chemically prepared agent.

The Pease Laboratories in a full investigation found the electrolytic hypochlorite "Milton" to have a "distinctly different behaviour" and to be "of unusual value" compared with other forms of hypochlorite examined. Masterman's tests (*Analyst*, July, 1939) suggest that this may possibly be connected with the presence of ozone in the former product.

WHY MILTON?

Because Milton is the only generally available preparation of electrolytic sodium hypochlorite of known standard strength (1% sodium hypochlorite, 10·8 grammes per litre of "available chlorine," i.e., 0·955% by weight) the composition of which remains unchanged under all reasonable conditions for an indefinite period. In the irrigation treatment of wounds, burns or ulcers, the advantages of using such a standardised and stable product are clear when the irritant, destructive action upon young growing tissue is considered of chemically prepared hypochlorite solutions of high or unknown strength. This drawback results largely from their containing free caustic soda, the production of which does not take place in the preparation of Milton, no bleaching powder being used in the process; it has therefore only a mild degree of alkalinity (*p*H 10·5), comparable with that of human tissues.

In 5% solution Milton is isotonic and at this dilution its anti-bacterial power remains high. It thus combines the properties of a saline solution with those of an effective germicide. It has been shown that a 1% solution actually encourages cell growth.

In the early stages of irrigation therapy, however, where thorough cleansing is desired, a hypertonic solution will often be the one of choice, so that free exudation of lymph may be promoted from the wound surface by osmosis. Milton in strengths up to 10% or in some cases 20% provides such a hypertonic saline solution, which still remains non-irritating and may safely be used without fear of tissue-cell damage.

After their germicidal and proteolytic functions have been effected, the active principles of Milton are reduced to a simple, harmless residue of salt and water, equally non-irritant. Milton may thus fairly be claimed to be a safe and effective germicide with the discriminating quality of removing the dead but preserving the living tissues for healing and repair.

★ *A Copy of the Pease Laboratories Report will be forwarded to any medical practitioner interested by the Professional Department of Milton Proprietary Limited, John Milton House, London, N.7.*

MILTON, brand of Electrolytic Sodium Hypochlorite, **is stable, non-caustic and of standard strength (1%)**

HENRY KIMPTON'S NEW PUBLICATIONS

NEW (SECOND) EDITION *JUST READY*

AN INTRODUCTION TO MEDICAL SCIENCE

By **WILLIAM BOYD**, M.D., F.R.C.P. (Lond.), F.R.S. (Canada)

Second Edition, Thoroughly Revised

Royal Octavo. 358 pages, with 124 illustrations. Cloth. Price **16**/- net (postage 7d.)

NEW (FOURTH) EDITION *JUST READY*

DIETETICS FOR THE CLINICIAN

By **MILTON A. BRIDGES**, M.D., F.A.C.P.

Fourth Edition, Thoroughly Revised

Royal Octavo. 960 pages. Cloth. Price **45**/- net.

¶ No effort has been spared to make it a valuable source of practical information and instruction in the application of dietary principles to the healing of the sick.

NEW WORK *JUST READY*

THE THERAPY OF NEUROSES & PSYCHOSES

A SOCIO-PSYCHO-BIOLOGIC ANALYSIS AND RESYNTHESIS

By **SAMUEL HENRY KRAINES**, M.D.

Royal Octavo. 512 pages. Cloth. Price **25**/- net (postage 9d.).

¶ This work has been written to aid the physician who has not specialized in psychiatry in dealing with his psychoneurotic patients.

NEW (SIXTH) EDITION *JUST READY*

ROENTGEN INTERPRETATION

By **GEORGE W. HOLMES**, M.D., & **HOWARD E. RUGGLES**, M.D.

Royal Octavo. 364 pages, with 246 illustrations. Cloth. Price **24**/- net (postage 9d.).

¶ This work is one of the most useful, practical and effective books on its subject ever published.

NEW (SECOND) EDITION *JUST READY*

ARTHRITIS & ALLIED CONDITIONS

By **BERNARD I. COMROE**, M.D., F.A.C.P.

Second Edition, Revised and Enlarged

Royal Octavo. 878 pages, with 242 illustrations. Cloth. Price **42**/- net.

"A valuable contribution."—*Edinburgh Medical Journal.*

NEW WORK *JUST READY*

CARDIAC CLASSICS

By **FREDERICK A. WILLIUS**, M.D., M.S., and **THOMAS E. KEYS**, M.A.

Royal Octavo. 846 pages, illustrated. Cloth. Price **50**/- net.

¶ In this book the authors record the milestones in the development of present-day knowledge of cardiovascular diseases.

NEW (SEVENTH) EDITION *JUST READY*

METHODS OF TREATMENT

By **LOGAN CLENDENING**, M.D., and **EDWARD H. HASHINGER**, A.B., M.D.

Seventh Edition, Revised and Enlarged

Large Octavo. 997 pages, with 138 illustrations. Cloth. Price **50**/- net.

¶ Every page has received critical scrutiny in the preparation of this revised edition, and in many places the book has been entirely recast, although the general plan has been retained.

NEW CATALOGUE OF MEDICAL PUBLICATIONS FREE ON REQUEST

26, Bloomsbury Way **HENRY KIMPTON** **London, W.C.1**

Ladd & Gross' Abdominal Surgery of Infancy and Childhood

Entirely New!—This *new* book is a unique and decidedly significant contribution to modern medical literature because it deals with a subject of special importance and one which has been greatly neglected in the literature. That Surgeons, Pædiatricians and General Practitioners alike have eagerly awaited this *new* book is evidenced by its *immediate success!*

This is *more* than a book on surgical technique—it is a book on *both diagnosis* and *treatment*, describing underlying causes, pathologic aspects, signs and symptoms; telling how to apply the accepted diagnostic methods and interpreting the findings; detailing by word and picture not only step-by-step surgical technique but also including use of diets, sulphonamide drugs, irrigations, general drug therapy, special measures such as the Sippy Treatment, etc., etc.

There are *614 illustrations on 268 figures* in this new book. These pictures are models of clarity; large in size; excellently executed; and splendidly reproduced—and all original. They include group picturisation on full pages of 37 basic operations with every step in technique exactingly portrayed.

By WILLIAM E. LADD, M.D., F.A.C.S., William E. Ladd Professor of Child Surgery, Harvard Medical School; Chief of Surgical Service, Children's Hospital, Boston; and ROBERT E. GROSS, M.D., Associate in Surgery, Harvard Medical School. 455 pages, $6\frac{1}{4}'' \times 10''$, with 614 illustrations on 268 figures. 50s.

W. B. SAUNDERS CO. LTD., 7, GRAPE STREET, LONDON, W.C.2

OXFORD MEDICAL PUBLICATIONS

THE EARLY TREATMENT OF WAR WOUNDS (Oxford War Manuals)
By **WILLIAM ANDERSON**, O.B.E.(Mil.), M.B., Ch.B., F.R.C.S.
Pp. 108 — 12 Illustrations — **5s.** net

THE TREATMENT OF BURNS (Oxford War Manuals)
By **A. B. WALLACE**, M.B., F.R.C.S., M.Sc.
Pp. 128 — 16 Illustrations — **5s.** net

GYNÆCOLOGICAL OPERATIONS
By **J. LYLE CAMERON**, M.D., F.R.C.S., M.R.C.O.G.
Pp. 212 — 26 Illustrations — **21s.** net

TECHNIQUE OF GASTRIC OPERATIONS
By **RODNEY MAINGOT**, F.R.C.S.
Pp. 252 — 54 Illustrations — **15s.** net

THE PRINCIPLES AND PRACTICE OF DIPHTHERIA IMMUNIZATION
By **J. TUDOR LEWIS**, M.D., D.P.H.
Pp. 170 — 13 Illustrations — **8s. 6d.** net

FRACTURES
By **GEORGE PERKINS**, M.Ch., F.R.C.S.
Pp. 394 — 40 Illustrations — **20s.** net

BLOOD TRANSFUSION
By **VICTOR HORSLEY RIDDELL**, M.D., F.R.C.S.
Pp. 384 — 65 Illustrations (9 in Colour) — **21s.** net

PHARMACOLOGY
By **J. H. GADDUM**, Sc.D., M.R.C.S., L.R.C.P.
Pp. 417 — 74 Illustrations — **17s. 6d.** net

URINE EXAMINATION AND CLINICAL INTERPRETATION
By **C. E. DUKES**, M.Sc., M.D., D.P.H.
Pp. 418 — 97 Illustrations — 12 Colour Plates — **25s.** net

PULMONARY TUBERCULOSIS
By **G. G. KAYNE**, M.D., M.R.C.P., D.P.H., **W. PAGEL**, M.D., and the late **L. O'SHAUGHNESSY**
Pp. 580 — 365 Illustrations — **42s.** net

TUBERCULOSIS OF BONE AND JOINT
By **G. R. GIRDLESTONE**, F.R.C.S.
Pp. 277 — 217 Illustrations — **30s.** net

VIRUS DISEASES OF MAN
By **C. E. VAN ROOYEN**, M.D., and **A. J. RHODES**, M.B., B.Ch., M.R.C.P.E.
Pp. 950 — 59 Illustrations — 4 Colour Plates — **63s.** net

JUST PUBLISHED

A TEXTBOOK OF THE PRACTICE OF MEDICINE

By Various Authors

Edited by **FREDERICK W. PRICE**, M.D., C.M., F.R.C.P., F.R.S. (Edin.)

A comprehensive and authoritative Textbook, including sections on Diseases of the Skin, Psychological Medicine, and Tropical Diseases. Special prominence is given to Diagnosis, Prognosis, and Treatment

6th Edition — Pp. 2077 — 99 Illustrations — **38s.** net

Oxford University Press

LEWIS'S BOOKS

JUST PUBLISHED — NEW (SIXTH) EDITION

With 8 Coloured Plates and 179 Illustrations in the text. Demy 8vo. **16s.** net; postage 7d.

COMMON SKIN DISEASES

By **A. C. ROXBURGH**, M.D., F.R.C.P., Physician-in-Charge Skin Department, and Lecturer on Diseases of the Skin, St. Bartholomew's Hospital; Consultant in Dermatology, Sector III, Emergency Medical Service; Consulting Physician and Lecturer, St. John's Hospital for Diseases of the Skin, etc.

EXTRACT FROM PREFACE: "Throughout the book the sections on treatment have been revised in the light of further experience and in many cases expanded. All this has involved an increase in the size of the book by 20 pages, but with, I hope, a proportionate increase in its usefulness."

A GUIDE TO HUMAN PARASITOLOGY FOR MEDICAL PRACTITIONERS

By **D. B. BLACKLOCK**, M.D.Edin., D.P.H.Lond., D.T.M.Liverp., and **T. SOUTHWELL**, D.Sc., Ph.D. Fourth Edition. With 2 Coloured Plates and 122 Text Illustrations. Royal 8vo. **12s. 6d.** net; postage 7d.

"... Admirably clear and brief."—BRITISH MEDICAL JOURNAL.

WAR WOUNDS AND AIR RAID CASUALTIES

Articles republished from the *British Medical Journal*. Foreword by **Sir WILLIAM P. MacARTHUR**, *K.C.B., D.S.O.*, M.D. With Illustrations. Demy 8vo. **10s. 6d.** net; postage 7d.

"... very interesting and useful."—GUY'S HOSPITAL GAZETTE.

A PATHOLOGY OF THE EYE

By **EUGENE WOLFF**, F.R.C.S. With 124 Illustrations. Crown 4to. **28s.** net; postage 7d.

"Contains a wealth of information which cannot be found in any other textbook on pathology."—MEDICAL PRESS AND CIRCULAR.

By the Same Author

ANATOMY OF THE EYE AND ORBIT

Including the Central Connections, Development and Comparative Anatomy of the Visual Apparatus

Second Edition. With 242 Illustrations. Crown 4to. **31s. 6d.** net; postage 7d.

"... must be acknowledged to be the best book on the subject."
—MEDICAL PRESS AND CIRCULAR.

By **A. G. TIMBRELL FISHER**, *M.C.*, F.R.C.S. Eng.

INTERNAL DERANGEMENTS OF THE KNEE-JOINT

Their Pathology and Treatment by Modern Methods

Second Edition. With 120 Illustrations on 60 Plates and 1 Text-figure. Demy 8vo. **15s.** net; postage 7d.

"... deserves the attention of surgeons and practitioners."
—THE CLINICAL JOURNAL.

TREATMENT BY MANIPULATION IN GENERAL AND CONSULTING PRACTICE

Third Edition. With 68 Illustrations. Demy 8vo. **12s. 6d.** net; postage 7d.

"... this book fills a need that must be felt by every practitioner."
—THE LANCET.

AEQUANIMITAS

With other Addresses to Medical Students, Nurses and Practitioners of Medicine

By **Sir Wm. OSLER, Bt.**, M.D., F.R.S. Biographical Note by **Sir WALTER LANGDON-BROWN**, M.D.Cantab., F.R.C.P. With a Portrait. Reprinted from the Third Edition. Demy 8vo. **7s. 6d.** net; postage 7d.

"... should prove of real value."—MEDICAL PRESS AND CIRCULAR.

THE MORPHINE HABIT AND ITS PAINLESS TREATMENT

By **C. LAUGHTON SCOTT**, M.R.C.S., B.A.Oxon. Second Edition. Crown 8vo. **5s.** net; postage 4d.

"... should prove of considerable assistance."
—POST-GRADUATE MEDICAL JOURNAL.

Recently Published. THIRD EDITION. With 142 Illustrations. **21s.** net; postage 8d.

A TEXTBOOK ON
THE NURSING AND DISEASES OF SICK CHILDREN FOR NURSES

By VARIOUS AUTHORS

Edited by **ALAN MONCRIEFF**, M.D., F.R.C.P.Lond., Physician to the Children's Department, Middlesex Hospital; Physician to Out-patients, The Hospital for Sick Children, Great Ormond Street; Pædiatrician, Queen Charlotte's Maternity Hospital; late Rockefeller Medical Fellow.

"... the new edition will enhance the already great popularity of the book among both children's nurses and pædiatrists."
—BRITISH MEDICAL JOURNAL.

NINTH EDITION. Thoroughly Revised and Enlarged. With 4 Plates and 208 other Illustrations. Pp. xiv + 975. 8¼ × 5¼ inches. **35s.** net; postage 1s. 3d.

PRACTICAL BACTERIOLOGY, HÆMATOLOGY AND ANIMAL PARASITOLOGY

By **E. R. STITT**, M.D., Sc.D., LL.D., Rear-Admiral, Medical Corps, and Surgeon-General, U.S. Navy, retired; **PAUL W. CLOUGH**, M.D., Chief of Diagnostic Clinic, Johns Hopkins Hospital, etc.; and **MILDRED C. CLOUGH**, M.D., formerly Fellow in Bacteriology and Instructor in Medicine, Johns Hopkins University.

"... the one book essential to any laboratory ... concise, up to date, wellillustrated, and readable."—THE LANCET.

ARTHRITIS, FIBROSITIS AND GOUT

By **C. W. BUCKLEY**, M.D., F.R.C.P. With 24 Illustrations on 14 Plates. Demy 8vo. **7s. 6d.** net; postage 7d.

"... short and authoritative ... amply illustrated."—THE LANCET.

THE ACTION OF MUSCLES

Including Muscle Rest and Muscle Re-education

By **Sir COLIN MACKENZIE**, M.D., F.R.C.S., F.R.S.Edin. Second Edition, Reprinted. Biographical Note by C. V. MACKAY, M.D.Melb., with a Portrait. With 100 Illustrations. Demy 8vo. **12s. 6d.** net; postage 7d.

"... much can be learned from this book."
—EDINBURGH MEDICAL JOURNAL.

THE PRINCIPLES AND PRACTICE OF OTOLOGY

By **F. W. WATKYN-THOMAS**, F.R.C.S., B.Ch.Camb., and **A. LOWNDES YATES**, *M.C.*, M.D., F.R.C.S. With 199 Illustrations. Demy 8vo. **25s.** net; postage 7d.

"... pre-eminently progressive."—MEDICAL PRESS AND CIRCULAR.

THE PRINCIPLES AND PRACTICE OF RECTAL SURGERY

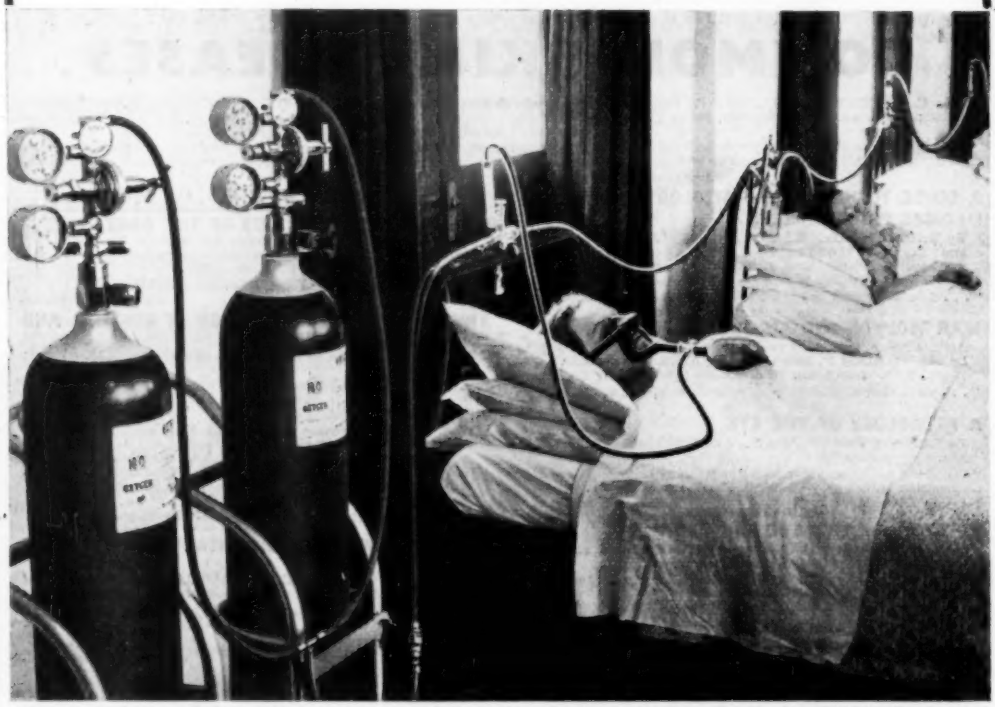
By **W. B. GABRIEL**, M.S.Lond., F.R.C.S.Eng. Second Edition. Thoroughly Revised, with 9 Coloured Plates and 162 Illustrations in the Text. Demy 8vo. **28s.** net; postage 7d.

"... practical, up to date, and rational."—THE LANCET.

**** *Complete CATALOGUE of Publications post free on application*

London: H. K. LEWIS & Co. Ltd., 136 Gower Street, W.C.1

GAS CASUALTIES?



SIMPLE AND INEXPENSIVE EMERGENCY EQUIPMENT FOR ADMINISTERING OXYGEN RESUSCITATION TO SEVERAL PATIENTS FROM A SINGLE CYLINDER

With this apparatus, any ward can be converted into an Oxygen Resuscitation Ward in a few minutes, without structural alteration. The apparatus consists of two 100 cubic feet Oxygen cylinders (one 'Running', and one 'Reserve' which automatically cuts in when the first is exhausted), and appropriate number of quick-coupling units, two automatic pressure regulators and tubing.

Assembly is extremely simple. Each control unit is clamped to the bedrail, and its rubber tube is plugged in to the check connector of the preceding unit. The appropriate flow meter and mask or nasal catheter is attached, and treatment commenced by opening the fine adjustment valve on the control unit. Units can be used independently of one another. There can be no wastage of Oxygen, as the check connectors are fitted with valves which allow the gas to flow only while the unit next astern is plugged in.

This apparatus is not only inexpensive to buy, and costs nothing to install but saves on the price of oxygen, which costs less per cubic foot in 100 cubic feet cylinders than in smaller ones.

The British Oxygen Company Limited's Technical Representatives will be glad to call on any Hospital with full details and prices.

THE BRITISH OXYGEN COMPANY LIMITED

MEDICAL SECTION

WEMBLEY

Incorporating COXETER & SON LTD A. CHARLES KING LTD.

ALASIL

Better Salicylate Therapy

WHATEVER be the season of the year, there is a wide sphere of utility for "Alasil," the improved form of salicylate medication. "Alasil" is a very definite advance on ordinary compounds of salicylic or acetyl-salicylic acid both in therapeutic efficiency and in freedom from unpleasant gastro-intestinal sequelæ. This high tolerability is due to the fact that "Alasil" is composed of acetyl-salicylic acid combined with Calcium Phosphate (Bibasic) and "Alocol" (Colloidal Hydroxide of Aluminium), a powerful gastric sedative and antacid.

A careful series of experimental tests has recently shown that "Alasil" is better tolerated and has a greater sedative effect than ordinary salicylate compounds, and that it is practically free from the risk of irritation of the mucous membrane of the stomach. Wide clinical experience anticipated these findings by demonstrating that the use of "Alasil" can be pushed or prolonged to a much greater extent than ordinary salicylate compounds, and that it can be given with equal safety to children, adults, the aged, and patients with finely-balanced digestive capacities.

A supply for clinical trial with full descriptive literature sent free on request.

A. WANDER, LTD.,
Manufacturing Chemists,
184, Queen's Gate, London, S.W.7.
Laboratories and Works: King's Langley, Herts.

M209

'PHYLLOSAN'

has been before the profession now for fifteen years and has stood the test of time, and the developments indicated point to still greater usefulness for this product in the future

(The Prescriber, Jan. 1938)

A Pamphlet entitled "Hyperpiesia, Metabolic Disorders, and the Anaemias"
giving laboratory and clinical reports will be sent to
Medical Practitioners on request

NATURAL CHEMICALS LTD., ST. HELENS, LANCASHIRE

For **RELIABILITY** *in Surgical and Orthopædic Appliances*

SEND YOUR PATIENTS TO

ALLEN & HANBURYS LTD
48, WIGMORE ST., LONDON, W.1
TELEPHONE — WELBECK 3005 (4 lines)
TELEGRAMS — ORTHOPEDIC, WESDO, LONDON

IN STAGE COACH DAYS LIVING WAS SIMPLE—AND RUGGED

But pain meant suffering then even as today. Many a dour disposition found its source in haemorrhoids . . . making a stoic of the sufferer who found little joy in living.

Today, pain and discomfort resulting from haemorrhoids may be safely and efficiently relieved by Anusol Haemorrhoidal Suppositories.

These Suppositories relieve inflammation and congestion without the use of narcotic, analgesic or local anaesthetic drugs. They control bleeding and make evacuation easy and painless.

ANUSOL BRAND
HAEMORRHOIDAL SUPPOSITORIES

Anusol is also available in ointment form.

WILLIAM R. WARNER & CO., LTD.
POWER ROAD · CHISWICK · LONDON, W.4

SEDATIVE and HYPNOTIC in Anxiety States and other Nervous Conditions

'TABLOID' PHENOBARBITONE and BROMIDE

℞ Phenobarbitoni Solubilis, gr. 1/3 (0·022 gm.)
Potassii Bromidi, ... gr. 7 (0·454 gm.)

An effective combination exerting a depressant action chiefly upon the cerebral cortex and subcortical ganglia.

Simultaneous administration of potassium bromide and phenobarbitone is a valuable therapeutic measure in the **treatment of nervous diarrhœa** and other types of gastro-intestinal dysfunction in which sedative and antispasmodic medication is needed. It is indicated in the symptomatic treatment of epilepsy, in nervous insomnia, delirium tremens and other conditions involving hyperexcitability of the motor cortex. It is also useful in thyrotoxicosis, in ulcerative colitis to lessen anxiety and to reduce the frequency of bowel action and in certain functional dyspepsias.

Bottles of 25 and 100 products, 1/9 and 3/9 each respectively
London Prices to the Medical Profession, subject to Purchase Tax and liable to fluctuation

BURROUGHS WELLCOME & CO., LONDON

H 4008

Two useful Items in the range of the

KAYLENE PRODUCTS

KAYLENE SALINE **is a combination of the toxin adsorbent Kaylene and the laxative salts necessary for carrying it through the intestinal tract. It is slightly effervescent and sweeps the intestinal tract free from toxic waste. It operates in the stomach, duodenum, small intestine and colon, and is most effective when administered in the early morning, a full half-hour before breakfast.**

Kaylene Saline is widely prescribed in the treatment of toxæmic conditions which are associated with constipation.

CARBOKAYLENE **unites the detoxicating action of Kaylene with the flatulence-reducing properties of highly activated vegetable charcoal.**

Carbokaylene removes the soluble precursors of intestinal gases by adsorption, and adsorbs the gases themselves whilst still in solution. Its general adsorptive action is demonstrated by the complete deodorisation of the stool.

Carbokaylene is freely used in the treatment of gastric flatulence and intestinal fermentation.

Samples on request

KAYLENE, LIMITED

Sole Distributors: **ADSORBENTS, LTD.**, WATERLOO ROAD, LONDON, N.W.2

'Proctoids' for Haemorrhoids

In addition to their special torpedo shape, which permits easy insertion and retention, the actual size of 'Proctoids' is worthy of note.

'Proctoids' hæmorrhoidal suppositories are thirty-five per cent. larger than the average bullet or cone-shaped rectal suppository, and for this reason afford the patient more prolonged medication. They provide a greater coating of the rectal canal by the cocoa butter and an increased area of contact by the Zinc Oxide, Boric Acid and Bismuth Oxyiodide (which contains about 6% iodine), also a more prolonged ephedrine effect.

Thus the lubricating, antiseptic and analgesic effects of this well-balanced formula are increased by the size of the suppository.

Samples on request

'PROCTOIDS' Brand Regd.
Hæmorrhoidal Suppositories

JOHN WYETH & BROTHER LTD. 25, OLDHILL PLACE, LONDON, N.16.
(Sole distributors for Petrolagar Laboratories Ltd.)

MIST. DAMIANÆ CO.

(HEWLETT'S)

In all the various forms of loss of nerve power Mist. Damianæ Co. (Hewlett's) is a powerful remedy, relieving the exhaustion and conferring renewed capacity for mental and physical endurance. Its invigorating properties will be found invaluable in many diseases where there is great exhaustion. **In the frequent cases of nervous depression following influenza it has been prescribed with great benefit.**

Dose: One or Two drachms in Water

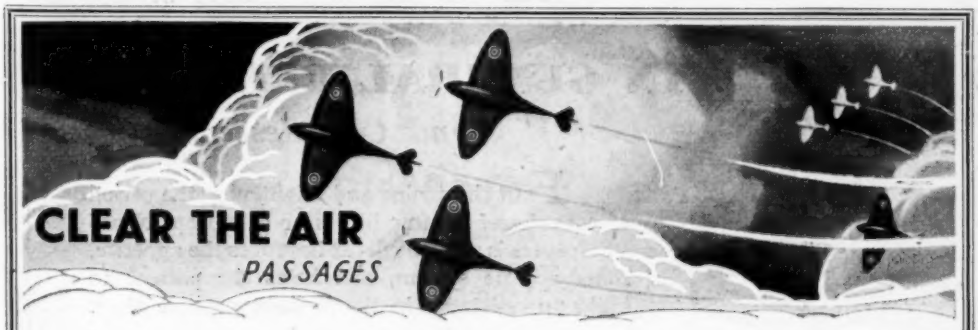
Packed in 5-oz., 10-oz., 22-oz., 40-oz., and 90-oz. Bottles

Caution. This preparation was introduced by us over 40 years ago. To obtain the *original* please write :—

Mist. Damianæ Co. (Hewlett's)

one of HEWLETT'S preparations

C. J. HEWLETT & SON, LTD., MANUFACTURING CHEMISTS, LONDON, E.C.2



ONE of the outstanding advantages of 'Benzedrine' Inhaler is that its vapour diffuses throughout the entire nasal cavity. It thus exerts its beneficial decongestive action in areas that are inaccessible to liquid inhalants, and rapidly promotes easy, natural breathing and nasal comfort. In reducing the incidence of head colds and paranasal sinusitis, 'Benzedrine' Inhaler has an unchallengeable record.

'BENZEDRINE' INHALER

Samples and literature on request to members of the medical profession

MENLEY & JAMES LTD., 123, COLDHARBOUR LANE, LONDON, S.E.5

BIS

SICCOLAM

A fat-free desiccant paste for the treatment of inflammatory conditions of the skin

Siccolam is the culmination of a long series of investigations, and its dermatological value has been confirmed by extensive clinical trial. The conclusion has been reached (Brit. Journ. Dermat. & Syph., June 1941, p. 177) that '. . . *technical properties render this preparation superior to the many lotions, such as calamine, zinc oxide lotion, etc., so commonly used in this country hitherto for the same indications.*'

Advantages of Siccolam—

1 Active in all inflammatory dermatoses
2 Absolutely innocuous No contra-indications to its use
3 Effects immediate adsorption of fluid exudate
4 Causes rapid relief of inflammation and pruritus
5 Active in both acute and chronic conditions
6 Can be used in conditions in which the use of fatty preparations is contra-indicated
7 Simple and cleanly in use Dries rapidly
8 Conveniently carried in screw-capped collapsible tubes

Literature on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Sic/E/5a

IN GENERAL DEBILITY

and Convalescence

FOR shortening and brightening the period of convalescence after illness or operation, Neuro Phosphates is unrivalled. It improves the appetite, tones up the system, and helps the patient to build up resistance in the shortest possible time.

NEURO PHOSPHATES

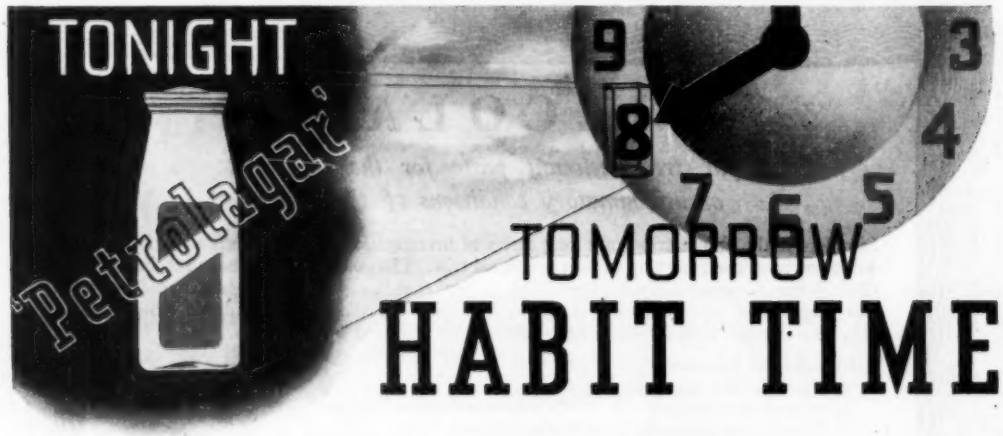
(ESKAY BRAND)

It is supreme as a reconstructive tonic in general debility and nervous exhaustion, and is therefore specially indicated to counteract the inevitable strains and stresses of war time.

Samples and literature sent to members of the medical profession on request.

MENLEY & JAMES LTD., 123, COLDHARBOUR LANE, LONDON, S.E.5

N4



'Petrolagar' taken regularly at night time before retiring will ensure a comfortable normal motion in the morning. 'Petrolagar' brand paraffin emulsion assists in establishing a regular daily motion, softens and expands the fæcal mass, contains no irritating cathartic drug and is not habit forming.
Prescribe 'Petrolagar' for your patients suffering from constipation and allied intestinal disorders. They will soon cultivate a definite daily "Habit Time" of bowel motion.

Samples gladly sent on request

'Petrolagar'

BRAND PARAFFIN EMULSION REGD.

JOHN WYETH & BROTHER LIMITED, 25, OLDHILL PLACE, LONDON, N.16

(SOLE DISTRIBUTORS FOR PETROLAGAR LABORATORIES LIMITED)

12

SELIX

(Dressing Adhesive)

Selix is a new type of sterile adhesive for securing various types of dressings; it is simple and cleanly in use and is suitable for the easy and rapid fixing of every type of dressing.

Selix possesses the following advantages:

1 Dressings can be securely fixed with it in awkward positions, such as on the knuckles, heels etc.

2 It is effective on wet as well as on dry surfaces

3 Selix can be removed merely by rubbing with the finger

4 Dressings can be removed easily, leaving the site clean and free from residues

Sample on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Telephone: Clerkenwell 3000 Telegrams: Tetradome Telex London

Slx/E/1

TRADE MARK **PYLUMBRIN** BRAND

Diodone

For Excretion Pyelography

Literature sent upon request

PYLUMBRIN is the same as 'PERABRODIL' and is equal in all respects to the product formerly imported from Germany. Pylumbrin is a non-irritant contrast agent which is rapidly excreted by the kidneys. It has been submitted to extensive clinical trials and the results show that it is well tolerated and excellent contrast shadows are obtained in radiography of the renal pelvis, ureters, and bladder.

AMPOULES of 20 c.c.		AMPOULES of 3 c.c.	
Single ampoule	9/2½	Single ampoule	2/2½
Box of 6 ampoules	55/1½	Box of 3 ampoules	6/7
		Box of 6 ampoules	13/1½

Prices net.

Obtainable through all Branches of

Boots

BOOTS PURE DRUG CO. LTD NOTTINGHAM

BOOTS PURE DRUG CO. LTD

8675-63A

PRICE REDUCTIONS

We have pleasure in announcing substantial reductions in the price of 'Prostigmin' parasympathetic stimulant and 'Ephynal' vitamin E. 'Prostigmin' is further reduced in price by abolition of Purchase Tax as from November 3.
The need for a reliable and convenient vitamin E product is met by 'Ephynal' tablets now available at remarkably low rates.

'PROSTIGMIN'

Ampoules and Concentrated Solution

Ampoules (1 c.c., 0.5 mg.) in boxes of 6 and 50 are reduced from 5/– and 30/– to 4/– and 24/– respectively.
Concentrated Solution (5 c.c. vials) mainly used in the treatment of myasthenia gravis is reduced from 11/– per phial to 6/–.
Tablets. A slight reduction is also possible in the case of the oral tablets (15 mg.), viz., packings of 20 will now be 8/– instead of 9/–, packings of 250, 76/– instead of 80/–. Packings of 100 are unchanged at 37/–.

These prices apply to the United Kingdom and Eire only.

NO PURCHASE TAX AFTER NOV. 3

'EPHYNAL'

Vitamin E

'Ephynal' Tablets, 3 mg., are now routinely used in pregnancy and other conditions in place of wheat-germ oil capsules. 'Ephynal' presents vitamin E in a stable and convenient form and is well tolerated.
The bottles of 30 and 250 are reduced from 5/– and 36/9 to 3/6 and 19/6 respectively. Bottles of 100 tablets at 9/– will be available in Great Britain shortly.

NO PURCHASE TAX

For further information and samples please apply to the manufacturers:—

ROCHE PRODUCTS LIMITED
WELWYN GARDEN CITY HERTS ENGLAND

A *Delicious, Concentrated*
Vitamin Food

TO the physician requiring a product which incorporates all the important vitamins in a form entirely pleasant and acceptable to every patient, "Vimaltol" presents special advantages.

"Vimaltol" is a concentrated vitamin food containing the vitamins A, B (complex), C and D. The vitamins are supplied from specially prepared malt extract and Halibut Liver Oil fortified with additional vitamins.

The presence of vitamin C, in combination with vitamins A, B and D, is a special advantage.

"Vimaltol" is thus an important aid in preventing or remedying the many abnormal conditions resulting from the deficiency of one or more of the essential vitamins in the average everyday dietary.

The routine use of "Vimaltol" ensures normal development of the growing organism and the maintenance of correct metabolism, while raising the general resistance against infection.

It is of signal value at certain physiological periods, such as infancy, adolescence and pregnancy, to prevent deficiency diseases and to restore normal metabolism in the many "border-line" cases arising from insufficient intake or defective assimilation of the essential food factors.

"Vimaltol" has thus a very wide application in general practice for patients of all ages.

VIMALTOL

A liberal supply for clinical trial sent free on request

A. WANDER LTD., 184, Queen's Gate, London, S.W.7

Laboratories and Works: King's Langley, Herts

M.305

A Mucilaginous Laxative with a natural mechanical action

I-so-gel

GRANULES

Indicated in

CHRONIC CONSTIPATION, COLITIS,

and allied gastro-intestinal disorders

I-so-gel is a natural vegetable material. The granules absorb many times their volume of water and swell into a firm, gelatinous mass which both stimulates natural intestinal movements and soothes inflamed intestinal mucous membrane. Indicated in chronic constipation, hæmorrhoids, colitis, dysentery, and allied gastro-intestinal disorders, and after colostomy.

Action purely mechanical.

Sugar-free. Ideal for diabetics.

In bottles at 3/- & 5/6 each.

Plus Purchase Tax.

ALLEN and HANBURYS LTD

LONDON E2

Telegrams: Greenburys Beth London

Telephone Bishopsgate 3201 (12 lines)

In Convalescence

when the digestive powers are weak or impaired

Allenburys DIET

solves the problem of feeding. Made from full-cream milk and whole wheat, it has a more varied composition than that of milk, is made easily assimilable by partial digestion during manufacture, and has an attractive flavour. The flavour may be varied by the addition of coffee, cocoa, etc., if required.

In tins, 2/3, 4/4 and 8/2.

ALLEN & HANBURYS LTD · LONDON · E·2

Telephone: Bishopsgate 3201 (12 lines) Telegrams: Greenburys Beth London

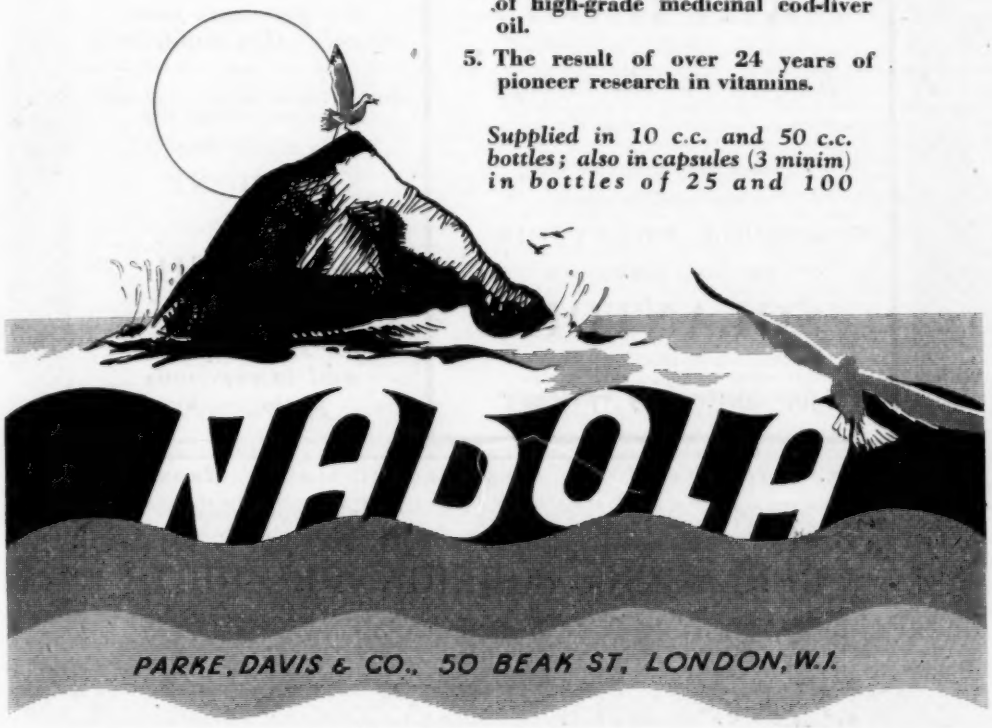
Natural
VITAMINS A & D

'NADOLA' is a standardized liquid obtained by careful blending of vitamin-assayed fish-liver oils. It possesses 90 times the minimum vitamin A potency and over 60 times the minimum vitamin D potency of B.P. cod-liver oil.

'NADOLA' is:—

1. **Derived entirely from fish-liver oils.**
2. **Blended to contain the ideal nutritional proportions of vitamins A & D.**
3. **Standardized to contain 55,000 International units of vitamin A and 5,500 International units of vitamin D per gramme.**
4. **So concentrated that 10 drops (or 1 capsule) are the vitamin equivalent of 3 teaspoonfuls of high-grade medicinal cod-liver oil.**
5. **The result of over 24 years of pioneer research in vitamins.**

Supplied in 10 c.c. and 50 c.c. bottles; also in capsules (3 minim) in bottles of 25 and 100



PARKE, DAVIS & CO., 50 BEAK ST, LONDON, W.1.

Approved descriptive names

BUTETHANOL
(*Para*-Butylaminobenzoyldimethylaminoethanol hydrochloride)
is now officially named
AMETHOCAINE HYDROCHLORIDE
The Glaxo preparation is
***ANETHAINE** BRAND
IN SOLUTION AND POWDER
for surface anaesthesia

2-Methyl-1 : 4-naphthoquinone
is now officially named
MENAPHTHONE
The Glaxo preparation is
KAPILON BRAND
IN LIQUID, TABLETS AND AMPOULES
for vitamin K therapy

Sodium diphenylhydantoinate
is now officially named
SOLUBLE PHENYTOIN
The Glaxo preparation is
SOLANTOIN BRAND
IN TABLETS
for control of epilepsy

Disodium salt of N-methyl-3 : 5-di-iodo-4-pyridone-2 : 6-dicarboxylic acid
is officially named
IODOXYL
The Glaxo preparation is
***PYELECTAN** BRAND
IN BOTTLES AND AMPOULES
for intravenous and retrograde pyelography

Dioxyanthranol
is officially named
DITHRANOL
The Glaxo preparation is
***DEROBIN** BRAND
IN POWDER FORM
for psoriasis and mycotic skin conditions

Diethanolamine salt of 3:5-di-iodo-4-pyridone-N-acetic acid
is officially named
DIODONE
The Glaxo preparation is
***PYELOSIL** BRAND
IN AMPOULES
for subcutaneous and intravenous pyelography

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRON 3434

★ REPLACING FOREIGN PRODUCTS

ORIGINAL ARTICLES

RENAL LESIONS IN TWO CASES OF CRUSH SYNDROME

J. SHAW DUNN, M.D. GLASG., M.SC. MANC.
PROFESSOR OF PATHOLOGY, UNIVERSITY OF GLASGOW

MARJORIE GILLESPIE, M.D. GLASG.
ASSISTANT PATHOLOGIST TO THE LONDON COUNTY COUNCIL

J. S. F. NIVEN, M.D. GLASG.
LECTURER IN PATHOLOGY, UNIVERSITY OF GLASGOW

(Pathological Department, University and Western Infirmary, Glasgow, and L.C.C. Group Laboratory, Hampstead)

FROM the accounts of the sequelæ of certain forms of crushing injury recorded by Bywaters and Beall (1941), Beall, Bywaters, Belsey and Miles (1941), Mayon-White and Solandt (1941), and others, it is clear that in such cases acute renal insufficiency is relatively frequent. While this is accompanied by certain pathological changes in the kidneys, the descriptions of the renal pathology so far available do not appear to offer a completely satisfactory explanation of the gross functional disturbances observed during life. Neither do they seem sufficient to provide a clear correlation of this with any previously described form of acute renal lesion. In two cases of this kind which we have recently had the opportunity to examine the changes in the kidneys are of a definite and unusual nature. We hope that our findings may stimulate inquiry as to whether similar appearances can be detected in the kidneys of other fatal cases of crush syndrome.

CASE 1

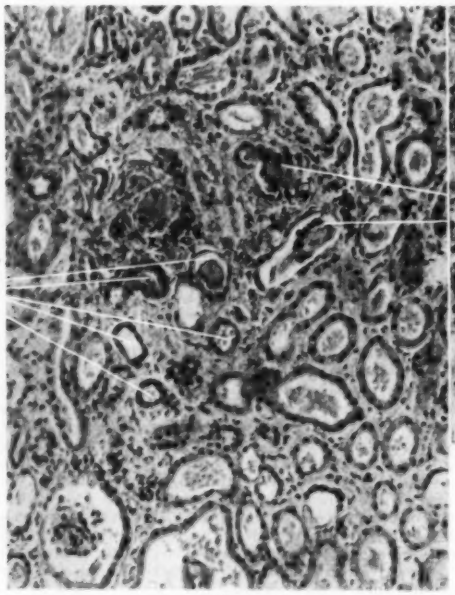
A woman, aged 18, was admitted as an air-raid casualty to the Hampstead General and N.W. London Hospital, on April 17, 1941, under the care of Mr. Arthur Gray, F.R.C.S. She had been pinned under a beam for six hours. On admission she was in a state of shock with cold extremities, and the blood-pressure was 112/78 mm. Hg. Both legs had been crushed under debris and there was an area of bruising on the left calf with death of a portion of skin, measuring 5 × 5 in. There were also many abrasions of the skin and a fracture of the pelvis was recognised by X rays. Steps were taken to counteract shock and the wounds were cleaned and treated with sulphanilamide powder and flavine; 2000 units of A.T.S. was administered intramuscularly. The patient received also potassium citrate gr. 30 and sulphapyridine 1 g. three times a day. During the following days the pulse continued poor though the blood-pressure had risen. There was restlessness and drowsiness without sleeping and vomiting was frequent. Some of the daily observations are recorded in the table. Œdema appeared in the legs, particularly in the right thigh, on the second day; it increased and became gross on both sides before death. Hiccough developed on the sixth day and acute dilatation of the stomach on the seventh; the dilatation was relieved by lavage. The pulse became variable, with dropped beats, and the patient died on the ninth day.

Observations in case 1

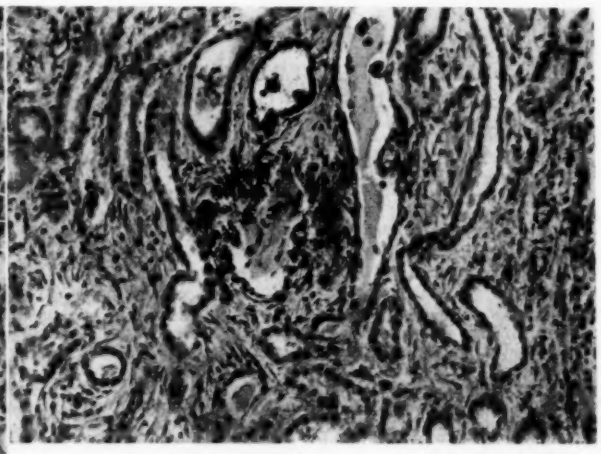
Day	Blood-pressure	Fluid intake	Vomiting	Urinary output	Urine	Urinary urea	Blood-urea	Hæmoglobin
	mm. Hg	c.cm.				mg/100 c.c m.		%
1	..	..	+	420	Blood +	..	..	..
2	..	1530	+	240	Blood +	..	..	..
3	140/90	1080	+	120 +	..	..	..	..
4	145/90	900	+	240 +	Red cells in deposit	..	..	..
5	136/85	510	+	180	Alb. + ; red cells + granular casts + +	..	106	85
6	165/85	3630	1770	240	Alb. + ; red cells + granular casts +	..	..	..
7	158/80	3600	3720	270	Tr. alb. ; no blood	..	200	83
8	165/80	3000	640	420	No blood or alb.	1000	368	..
9	130/68	..	..	..	..	..	..	..

An *autopsy* was performed (M. G.) on April 26, twenty-three hours after death. There were numerous skin abrasions and the injuries previously mentioned were confirmed. A circumscribed area of pale necrosis 6 cm. long was found in the right quadriceps femoris muscle. Œdema was present in both legs and in the chest wall. The heart showed no important change. Petechiæ were present in the pericardium and pleuræ. The pleural cavities each contained 1500 c.cm. of clear fluid; both lungs were grossly œdematous. No important change was seen in other organs apart from the kidneys. These were enlarged (R. 242, L. 230 g.). The capsules were non-adherent and the surfaces smooth. On section fluid oozed from the cut surfaces. The renal cortex was pale and mottled, and in the deep parts there was an opaque whitish zone 2 mm. in breadth surrounding the bases of the medullary pyramids, which were darkly congested.

Histological examination of the kidneys shows that the general arrangement of the cortex is not disturbed by any antecedent chronic change. There is a slight separation of the tubules as by œdema. The glomeruli are normal in size, cellularity and blood content. Spheroidal masses of homogeneous material, somewhat resembling dead cell bodies, occur in many of the capsules of Bowman; these appear to be albuminous aggregates, for the lining cells of the capsules are, in general, in situ and normal. In the *first convoluted tubules* the epithelium is of normal appearance; there is no catarrh or evidence of recent regeneration, while with special stains neither fat nor hyaline droplets are demonstrable. Their lumina, sometimes very slightly dilated, contain amorphous debris or rounded masses like those in the capsules; no hæmorrhages or casts are seen in them. The *second convoluted tubules* are more conspicuous than normally owing to denser nuclear staining. All of them show some pathological change, though the degree of this varies greatly. In the majority the alterations are slight, comprising moderate dilatation of lumina, slight basophilia of cell protoplasm and increase in the number and density of staining of nuclei. These appearances, which correspond to those seen in regenerated tubules after a mild experimental tubular nephritis, are more pronounced in occasional tubules or in small groups of segments where mitoses can be recognised in the cells: around such tubules there is definite plastic overgrowth of the supporting interstitial tissue (fig. 1). In many of these second convoluted tubules there are also light casts of orange-brown material resembling hæmoglobin which takes the form of beaded filaments or amorphous masses. In one or two places in the cortex there are foci of still more severe damage of second convoluted tubules of a type which will be described in the boundary zone where they occur in much larger numbers (fig. 2). *Boundary zone.* It is in this region, where the straight descending limbs of first convoluted tubules in the medullary rays of the cortex are changing to narrow descending limbs of Henle, that the most remarkable histological picture is observed. In any single section the low power reveals large numbers of severe focal lesions affecting the broad ascending limbs of Henle's loops, the segments which lead up to the second convoluted tubules in the cortex (fig. 3). These lesions often occur in groups and each group is surrounded by a very definite recent overgrowth of interstitial tissue. By examination of serial sections it is in most instances easy to ascertain that each focus implicates not only a tubule but also the thin wall of an adjacent venule. The tubule can be traced from comparatively normal conditions above and below to a level where there occurs an aneurysmal bulge of 40–80 μ diameter. This is usually filled by a dense mass of albuminous coagulum which stains faintly with eosin and gives a light fibrin reaction. The epithelium lining the bulge has suffered especially severe damage and the actively regenerating cells are often thinned out and flattened, the relining being sometimes incomplete. This bulging part of the tubule indents the wall of the small venule and often protrudes into the lumen of the latter, while in some instances there is clear evidence that it has actually ruptured through (fig. 4). The inner wall of the venule at a point of rupture is covered by a cap of thrombus continuous with the coagulum in the tubule, and frequently a strand of proliferated epithelium is enclosed in the thrombus. Sometimes a considerable strand of proliferated cells extends in the venous channel, loosely held in thrombus. These proliferating cells in this unusual site can be identified with considerable



1



3

FIG. 1—Moderate lesions of second convoluted tubules in cortex (indicated by white lines); proliferation of epithelium with new cells cast off in some lumina. First convoluted tubules all around are normal apart from debris in lumina. × 150.

FIG. 3—Ascending limbs of Henle in boundary zone. One intense lesion in centre with dilatation of lumen and active regeneration of epithelium; tubules nearby less affected; normal tubules on left above. × 150.

certainty as epithelial; the endothelium of the vessel is unaltered except where it has been completely destroyed under the cap of thrombus. In many of the smaller foci of this type the albuminous mass protrudes through a gap in the dilated wall of the tubule into the connective tissue outside, and it is not clearly ascertainable that it has entered a venule, though the appearances leave it possible that a very small vessel has been involved. The number of these foci of intense tubular damage is in this case very large, so that in a single low-power field it may be possible to identify three to five involving the wall of one of the larger venules of 200 μ diameter (fig. 5).

Medulla. Most of the collecting tubules are normal but in a number of them there are orange-brown casts of varying size. These are mostly light and are composed of beaded ribbons of material resembling hæmoglobin. A few are more solid and are large enough to press on the epithelial lining, which is then flattened and may show some regenerative change. The evidence of damage of cells is, however, comparatively slight in any of the collecting tubules.

CASE 2

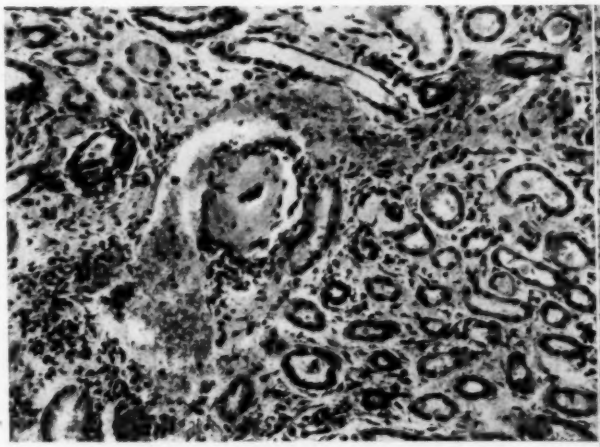
A man, aged 51, admitted to hospital on April 17, 1941, was an air-raid casualty who had been buried under debris for 8 hours. He had crushing injuries of the legs with fracture of the right internal malleolus and laceration of muscles in the right foot. The clinical course was characterised by oliguria and hæmaturia, and the blood-urea rose from 100 mg. per 100 c.cm. on April 21 to 384 mg. on the 24th and 400 mg. before his death on the 25th. On the 24th the urinary urea was 1·3 g. per 100 c.cm. and chlorides 1·5 g. as NaCl per litre. The illness was similar to that in case 1.

Autopsy.—There was no obvious œdema of subcutaneous tissues. The heart showed slight dilatation of the right ventricle. Both lungs had areas of consolidation in the lower lobes with suppurative softening and there was pleurisy on both sides. The kidneys (R. 180, L. 210 g.) were large and of firm fleshy consistence, not fibrous. The surfaces were slightly granular and there were a few small areas of indentation of irregular shape. On section the cortex was of normal width and aspect, apart from some congestion. The pyramids were congested.

Histological examination.—There are in the renal cortex a considerable number of ill-defined areas of partial atrophy of tubules with sclerosis of a few glomeruli, and around these there is some interstitial thickening with lymphocytic infiltration. In the medulla also some vertical bands of moderate fibrosis occur. These changes, which may have been pyelonephritic in origin, are clearly of old standing and in keeping with this there is some diffuse intimal thickening in arteries and arterioles. There remain, however, considerable areas of cortex which have been practically normal, and in these parts there can be recognised lesions of recent date similar to those described in case 1. These lesions comprise the following: (*a*) Light brown casts resembling hæmoglobin in second convoluted tubules. (*b*) Proliferation of cells in some of these tubules. (*c*) The more intense focal lesions with rupture of tubules and extrusion of albuminous material. The majority of these are of small size and cannot be seen to enter venules; most of them occur in the boundary zone. A few of them, however, are larger and implicate the walls of venules as in case 1. The walls of the venules are thicker in this case and may have been less easily perforated. The lesions here appear to be slightly older and more nearly healed than in case 1. (*d*) In the medulla large orange-brown casts occur in many collecting tubules and their presence is associated with some appearance of damage and regeneration of epithelium. The casts are more numerous than in case 1.

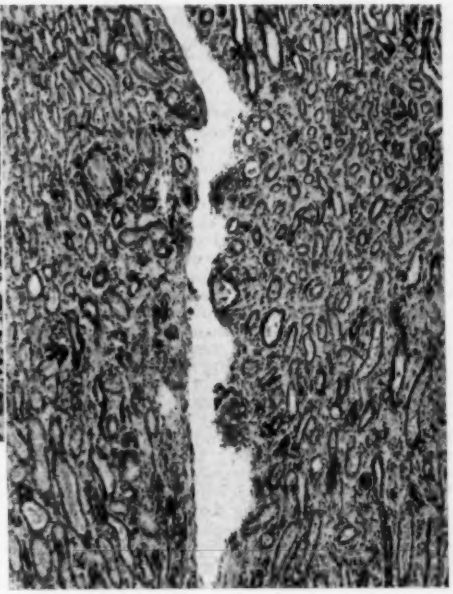
DISCUSSION

In the records of fatal cases of crush syndrome the brown casts in the renal tubules have been a conspicuous feature, and similar casts have been described in the urine of cases which recovered (Longland and Murray 1941). The question has been raised whether blockage of tubules by these casts could be the cause of the renal disability, but histological evidence on this point is inconclusive. The persistence of casts in the tubules could so easily depend on diminution of filtrate, whether this resulted from an impaired circulation or from some other cause. The most important criticism of the blockage theory, however, has been made by Bywaters and Beall, who point out that if tubular obstruction alone were concerned such urine as was secreted should theoretically be of normal composition, coming from unobstructed tubules; but in their experience the urine was little more than a glomerular filtrate (urea-concentration factor 1·6–2·8 in their cases 1 and 2), and this is confirmed by figures taken from Henderson's (1941) chart of a recovered case (concentration factor about 3·3 on the tenth day when the urinary output was about 700 c.cm.). In our cases 1 and 2 also single observations on the eighth day gave concentration factors of only 2·7 and 3·3 respectively. Such extreme degrees of ablation of one of the highest functions of the kidney are of considerable moment and it is no doubt significant that among acute renal conditions the greatest reduction of concentrating power is known to occur when there is severe damage of tubular epithelium. This may be observed in mercurial



4

FIG. 4—Tubulo-venous lesion in boundary zone. Dilated tubule filled with coagulum bulging into venule into which rupture had occurred. × 150.



5

FIG. 5—Three tubulo-venous lesions in which ruptures have occurred. × 65.

nephritis in man and has been a characteristic finding in experimental tubular nephritis in animals (Dunn, Howarth and Jones 1924).

The most comprehensive descriptions of tubular epithelial changes so far available are by Bywaters and Beall, who mention severe damage in the form of fraying of protoplasm and vacuolation, but also regenerative changes with mitotic division and proliferation. These are referred to ascending limbs of Henle and to convoluted tubules generally. Mayon-White and Solandt have noted degenerative changes of acute character with pyknosis of nuclei, but mention no special localisation. Minami (1923) who, as has been pointed out by Bywaters (1941), gave an account of the renal lesions in cases of similar character, also described only acute changes in convoluted tubules without specific localisation. In our own cases the definite epithelial alterations appear to be restricted to ascending limbs of Henle and to second convoluted tubules, and are at a proliferative and healing stage, as might be expected in tubular lesions of over a week's duration. The identification of the two sets of convoluted tubules in a previously normal kidney is not difficult. Apart from having a wider diameter and taller epithelium, each first tubule forms a compact mass of closely packed convolutions into which no other tubule enters. The second, with narrower calibre, lower epithelium and closer set nuclei, is much shorter and pursues an open angled course between the above masses; it therefore appears in sections only as isolated rings or ovals or in small rather loose groups. The ascending limbs of Henle which lead to the second tubules are, it may be noted, somewhat similar to these in histological appearance. While the anatomical structure and arrangement of the nephrons are now fairly fully established, much as yet to be learned about the functioning of the different parts, but there is increasing evidence that it is in the lower segments that final adjustment of reaction occurs, in man and carnivora as a rule to the acid side.

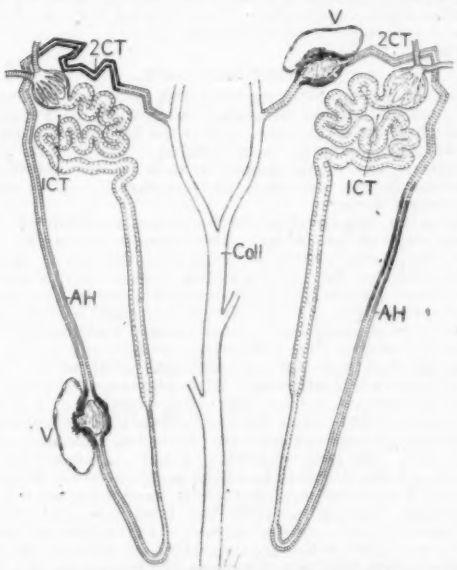


FIG. 2—Arrangement of nephrons, showing sites of lesions. 1.C.T., 2 C.T. = first and second convoluted tubules. A.H. = ascending limbs of Henle's loops. Coll. = collecting tubules. V. = venules with severe tubulo-venous lesions.

It is difficult to find in the diseases of man any analogy for a condition of acute selective damage of the lower segments of the nephron, but evidence drawn from experimental lesions in animals may assist in elucidating the pathogenesis of a lesion of this kind. Dunn and Polson (1926) have shown that by the introduction into the circulation of the rabbit of large doses of uric acid in solution, in the form of lithium monourate, severe selective damage can be produced in the ascending limbs of Henle, second tubules and to some extent collecting tubules, while the first convoluted tubules remain normal in appearance. Necrosis of the epithelial linings is produced within an hour or so of the injection, and regenerative changes are in full swing by the fourth to eighth day. In the regenerative phase the lesions show distinct similarity to those in the present cases, except that tubulo-venous lesions are not found. In these animals, just as in uranium or oxalate nephritis where the first convoluted tubules are selectively damaged, there is anuria or oliguria with low urea concentration, and the blood-urea rises. These phenomena have been attributed by Dunn and Polson to non-selective reabsorption of filtrate through the damaged walls of tubules into the blood, thus escaping excretion. More recently McFarlane (1941) has shown that in the experimental phosphate nephritis of rats, which was described by Mackay and Oliver (1935) and by Duguid (1936), the

lesion is again almost restricted to the lower nephron segments, and he agrees with Dunn and Polson in attributing the special localisation of lesions at this level to change of reaction in the filtrate, added no doubt to increase of concentration which has been effected at higher levels.

A feature which appears to be unique among the tubular changes in the present cases is the localisation of the most intense damage at points where the lower nephron segments lie in close proximity to veins. Further confirmation of this occurrence in other cases would be desirable but in our material the frequency of the association is so remarkable as to suggest a definite causal nexus. In uric-acid nephritis there seems to be little doubt that the lesion is determined by precipitation of the agent from a soluble form in which it is relatively harmless to a solid which exerts the destructive effect. It seems possible that in the present cases also a substance of special toxicity is produced in the presence of acid, and that the proximity of venous blood has an influence in permitting a greater swing towards an acid reaction in this area than is reached at other parts.

Nothing certain is known as yet of the nature or source of any toxic agent which may be responsible for the renal damage in cases of crush syndrome. The available facts, however, appear to justify the primary view to which most observers have adhered—that after release of the affected tissue from a compressed and more or less ischæmic state something toxic is absorbed from it into the circulation as the vessels reopen, and that the toxic agent affects the kidney in the course of excretion. The number and kinds of possible toxic agents which could so arise is conjectural and the suggestion that the cast material, which apparently contains myohæmoglobin (Bywaters and Delory 1941), is toxic is not to be ignored. Some light will probably be thrown on the genesis of this condition by experimentation with products obtained from muscle or other tissues. While not attempting to prejudge the results of this investigation, we suggest that both uric acid and phosphoric acid may well come under review as possible toxic agents, seeing that both of these molecules have a well-recognised origin in muscular tissue in the form of inosinic acid.

The part, if any, which may be played in the initiation of this syndrome by lowered blood-pressure consequent on shock has yet to be determined. Bywaters and Beall, while recognising that oliguria may be contributed to by a fall of systemic pressure and also by dehydration, could not attribute primary significance to either of these factors in their cases. There appears also to be general agreement that the degree and kind of renal functional disturbance which develops after crushing of the limbs is quite distinct from any of the sequelæ of ordinary surgical shock, and the exact pathology of the renal lesion itself is required in order to throw some light on this special feature. Maitland (1941) has suggested that the renal failure may be caused by vascular stasis in the kidneys resulting from low blood-pressure and aggravated by hæmoconcentration, while the circulation is flooded by abnormal protein from damaged muscles. It would be impossible at present to deny significance to any of these factors acting separately, but it does not seem a good argument that they would act concurrently in the early hours when injury appears to be inflicted on the kidneys; an accumulation of abnormal products in the blood would imply a fair circulation even through the injured limb, and an important lesion confined to the kidneys would suggest that they had received an adequate dose of the toxic agent from blood which passed through them. The significance of selective involvement of the kidneys in the present cases can hardly be overlooked, and it may be set in contrast to the lack of evidence for damage of other organs—the liver, for example, appears to function normally, for urea formation proceeds unchecked and large amounts accumulate in the blood. In considering possible reasons for specific localisation of damage in the kidneys attention may be drawn to a fundamental observation in experimental nephritis—that renal tubular damage can be most surely produced when the renal blood-flow is normally abundant and the concentrating power of the organs is unimpaired; for these reasons they sustain a more intensive attack by the toxic agents than do other tissues.

SUMMARY

The most definite changes found in the kidneys from two cases of crush syndrome are restricted to the ascending limbs of Henle's loop and second convoluted tubules; the lesions are in a healing stage.

The most severe of the tubular lesions implicate the walls of small venules, into which many of them have perforated.

The special localisation of these lesions may depend on change of reaction in the tubular contents at these levels.

Uric acid and phosphoric acid are substances capable of producing selective damage in these tubular segments.

We are indebted to Mr. Arthur Gray for permission to abstract the clinical notes of the cases and to Dr. Robert Cruickshank for his assistance in procuring the pathological materials. Reproductions of photographs by Mr. John Kirkpatrick.

REFERENCES

Beall, D., Bywaters, E. G. L., Belsey, R. H. R. and Miles, J. A. R. (1941) *Brit. med. J.* **1**, 432.
Bywaters (1941) *Ibid*, **2**, 29.
— and Delory, G. E. (1941) *Lancet*, **1**, 648.
— and Beall (1941) *Brit. med. J.* **1**, 427.
Duguid, J. B. (1936) *J. Path. Bact.* **43**, 321.
Dunn, J. S., Haworth, A. and Jones, N. (1924) *Ibid*, **27**, 377.
— and Polson, C. J. (1926) *Ibid*, **29**, 337.
Henderson, R. G. (1941) *Brit. med. J.* **2**, 197.
Longland, C. J. and Murray, J. (1941) *Lancet*, **2**, 158.
McFarlane, D. (1941) *J. Path. Bact.* **52**, 17.
Mackay, E. M. and Oliver, J. (1935) *J. exp. Med.* **61**, 319.
Maitland, A. I. L. (1941) *Lancet*, **2**, 446.
Mayon-White, R. and Solandt, O. M. (1941) *Brit. med. J.* **1**, 434.
Minami, S. (1923) *Virchows Arch.* **245**, 247.

T.N.T. JAUNDICE

ROBERT M. EVANS, M.B. CAMB.
MEDICAL REGISTRAR AT THE ROYAL SOUTHERN HOSPITAL, LIVERPOOL

THIS is an account of observations on seven patients employed in an ordnance filling factory and suffering from toxic jaundice, apparently caused by trinitrotoluene. The condition is not uncommon under the present war conditions, and early diagnosis and treatment are essential. All our cases have occurred within 6 months of beginning employment at the ordnance factory, and in one fatal case the patient had been in contact with explosives for only 3 weeks when symptoms appeared. Six out of seven cases were in women, three of whom were unmarried; there was no history of pregnancy toxæmia in any patient. Two of the patients died.

SYMPTOMATOLOGY

Nausea or vomiting was the first symptom noticed in five patients; in the remaining two jaundice and cyanosis were the first symptoms. After an interval lasting up to 12 days jaundice was noticed. A constant early symptom was vague epigastric pain or discomfort and anorexia which preceded the appearance of jaundice by several days.

Jaundice appeared in all the patients within 12 days of the onset of symptoms. The colour in the early stages was the lemon yellow of toxic jaundice, to be distinguished from the more greenish yellow of obstructive jaundice. This colour is like that of a one in a thousand aqueous solution of acriflavine, and is really lemon yellow with a trace of orange; it is readily distinguished by clinical students from the colour of obstructive jaundice patients, but may be confused with that of catarrhal jaundice. Difficulty may arise because many of the healthy workers show some orange tinting of the hair and exposed skin from the local action of the explosives. In three of the patients the jaundice increased after admission and became rather darker. A tendency to bruising was noticeable in all the patients whose jaundice was well marked, and petechial hæmorrhages were a prominent feature of both the fatal cases. Cyanosis and anæmia were only observed in two of the patients, and it must be noted that cyanosis is very common in these workers and is not necessarily related in any way to jaundice. The liver was not grossly enlarged in any case, and was only palpable in one patient who subsequently developed signs of cirrhosis.

The temperature remained subnormal except in the terminal phase of the two fatal cases. There were no rigors, and no patient complained of chills. The pulse-rate was variable, but was usually about 80 per min. in most patients. The absence of fever and rigors is one of the main differential points between this condition and catarrhal jaundice.

The urine contained bile-pigments in all cases, and there was albuminuria at some period in four patients. Webster's test [1] demonstrated the excretion of trinitrotoluene in the urine, but was not constantly positive in all patients, only becoming so during treatment in some cases. Many of the workers in trinitrotoluene give a positive Webster test; this indicates not intoxication but only excretion of the substance. Leucine and tyrosine crystals were not demonstrated in the urine of any patients.

The blood in all cases gave a positive direct and indirect van den Bergh reaction. No constant changes could be demonstrated spectroscopically, because owing to enemy action adequate facilities were not available. Anæmia was only severe in one patient who developed aplastic anæmia after the jaundice had resolved. The white-cell count showed a leucocytosis of up to 15,000, with relative polymorphonuclear increase in several patients (this has been observed in some apparently normal workers).

The lævulose-tolerance test was performed as a routine during convalescence, but showed no abnormality in any of the cases which reached this stage.

No evidence of the presence or formation of gall-stones was found at any stage.

AUTOPSY FINDINGS

Two patients have died, one from acute liver atrophy 16 days after the appearance of jaundice, the other from aplastic anæmia 18 weeks after the onset of jaundice and 9 weeks after its disappearance.

The findings in the first case were those of acute yellow atrophy of the liver. There was extensive jaundice, with many ecchymoses and petechial hæmorrhages on all serous membranes. The liver was grossly shrunken, soft and bile-stained, and weighed only 21 oz.; the appearances were those of the necrotic stage of acute yellow atrophy. The spleen showed some softening but was otherwise normal. The bone-marrow was red in the whole length of the right femur. The kidneys showed poor differentiation of medulla from cortex (possibly partly post-mortem change). Other organs showed no gross abnormality apart from bile-staining. Sections showed gross necrosis and disorganisation of the liver lobules, with some infiltration with round cells, and much amorphous debris, presumably from broken-down liver cells. The bile-ducts were not much affected, and did not show any inflammatory or hyperplastic changes.

The second fatal case was of special interest, for the jaundice had resolved completely 9 weeks before the patient died of aplastic anæmia, of which there was no sign while the jaundice was present. The post-mortem appearances were as follows. Pallor of the skin and some ecchymoses. The fauces and soft palate were ulcerated. The liver was finely granular and somewhat shrunken. The cut surface of the liver showed some pale areas of degenerating liver tissue, and pink areas of developing fibrosis. It weighed 40 oz. The spleen and kidneys showed no gross abnormality. The marrow of two ribs, the sternum, lumbar vertebræ and upper halves of both femurs was reddish, but not as red as typical hyperplastic marrow. Other organs showed no gross abnormality. Sections showed subacute necrosis of the liver, with some fatty degeneration, hypertrophy and fibrosis. Marrow smears showed no evidence of myelocytes or nucleated red cells.

CLINICAL COURSE AND TREATMENT

The patients must be removed from contact with trinitrotoluene as soon as the condition is suspected, and put at rest. On admission to hospital all the patients except one were given 20 g. of glucose daily in drinks, and 15 units of insulin per day; in this one case the jaundice persisted for 2 months—about a fortnight longer than the average period for the others. Vitamin C, 100 mg., was given daily by mouth. A light diet was given, and symptomatic treatment ordered as required. It should be remembered that many drugs—e.g., sulphonamides, chloral hydrate and amidopyrine—may cause damage to the liver or bone-marrow, and so are to be avoided in T.N.T. poisoning. The jaundice in several cases increased after admission to hospital, but began to fade after 1–2 weeks, and in four cases was gone within 6 weeks; one other resolved after 8 weeks, and a second resolved slowly about 3 months after the onset.

The true end-results of the condition in these patients cannot yet be estimated, for it is only 6 months since the first patient became jaundiced. The present condition of all the patients may be summarised thus:

One patient has died of acute yellow atrophy (case 1).

One patient developed agranulocytic angina with the blood-picture of aplastic anæmia, and in spite of all treatment died 14 days after readmission (case 2).

One patient has ascites, apparently from cirrhosis, but is now free from jaundice, and the effusion has to be tapped only at increasing intervals (case 3).

Four patients have apparently recovered and are free from all symptoms.

The final result of the four apparent recoveries and the patient with cirrhosis can only be judged when further time has elasped and liver-function tests have been carried out. The findings in the liver of the second fatal case seem to indicate that a good deal of regeneration of liver tissue can take place, and probably has taken place in the apparent recoveries.

CASE-RECORDS

CASE 1.—Unmarried woman, aged 21, started work at ordnance factory in March, 1941. On July 9 she was admitted to hospital complaining of jaundice, noticed for about 4 weeks; on July 5 she had felt pain in the epigastrium, and had vomited next day. The bowels were regular, but pale stools were noticed about July 5. On admission there was a fairly well-marked yellow jaundice, with clean moist tongue, and normal temperature and pulse-rate; the urine contained bile-pigments, but no other abnormal constituent. Van den Bergh reaction, positive direct and indirect. Webster test on the urine became positive on July 14 and a faint trace of albumin appeared in the urine on July 17. The blood-picture was normal. On the 19th the jaundice was deeper, and the patient was rather dazed, with poor pulse and persistent vomiting. Intravenous glucose saline drip was instituted, but her condition deteriorated. On the 21st petechiæ and ecchymoses appeared, and the liver dullness was decreased. The patient died on July 23 with high terminal pyrexia.

CASE 2.—Unmarried woman, aged 35, started work with T.N.T. on March 10. On the 31st she noticed nausea, succeeded a day or two later by vomiting; epigastric discomfort and jaundice appeared on April 6. She was admitted to hospital on April 12. There was well-marked jaundice, with bile-pigments in the urine and pale stools. Constipation was not noted. The temperature and pulse were normal, and no other abnormalities were found. At this time blood examination revealed 5% reticulocytes and no anæmia. The jaundice became extremely deep about May 5 and then faded. A trace of albumin was found in the urine at this time. On June 7 the patient was symptom-free, with no jaundice and a normal lævulose-tolerance test. She was discharged from hospital and went away on holiday.

On Aug. 2 she returned from holiday and was readmitted complaining of sore throat and petechial rash. Blood examination revealed agranulocytosis and aplastic anæmia, which were the cause of her ulcerated throat. The temperature fluctuated about 101° F. and the pulse-rate about 110 per min. Daily transfusions of fresh blood, with intramuscular liver extract and pentnucleotide daily failed to influence the condition, and she died on Aug. 16. During this second period in hospital there was no jaundice.

CASE 3.—Married woman, aged 42, with history of three normal pregnancies. Started work at factory on Feb. 7, 1941. On April 20 she vomited and noticed dark urine; next day she noticed a tinge of jaundice and felt vague epigastric pain. She was admitted to hospital on April 25 with mild jaundice. The temperature and pulse-rate were subnormal and remained so. The liver was not palpable, but there was slight tenderness on pressure in the right subcostal region. The urine contained a trace of bile-pigments and the blood van den Bergh test was positive both direct and indirect. No other abnormality was detected. The jaundice persisted and the patient vomited once after admission. On

1. *Lancet*, 1916, 2, 1029.

May 3 the liver edge was palpable. She was given glucose and insulin, and a light low fat diet. On May 14 the jaundice was deeper and the liver no longer palpable. On June 3 there were œdema of ankles and signs of ascites, and the patient was seriously ill. Paracentesis on the 4th yielded 10 pints of yellow fluid; on the 7th 21 pints of fluid was obtained. Six further paracenteses were performed between June 18 and Aug. 4, during which period the jaundice gradually subsided and the general condition improved. On Aug. 5 she began to pass more urine, and further paracentesis has been unnecessary. On Sept. 1 she was improving steadily, with no abdominal distension and no jaundice of the conjunctivæ, although skin pigmentation remained.

DISCUSSION

It seems that some people are much more susceptible to trinitrotoluene than others. It also seems probable that if workers do not develop some toxic manifestation in their first 6 months they will by then have acquired some immunity, if they are not naturally unsusceptible.

Moore [2] showed that the main channel of absorption is by the skin, and it is noteworthy that while dermatitis is common among workers at the factory not one of the patients in this series had been troubled by any skin eruption. Apparently there is a susceptibility or sensitivity of different tissues in different individuals.

The patient who died of acute liver necrosis had apparently a hyperplastic marrow, and yet the blood-picture showed only a very slight anæmia and no increase in reticulocytes; in the other fatal case, where the liver was apparently able to carry out most functions adequately, there was an aplastic blood-picture, but the marrow was not aplastic. Is it possible that the aplastic anæmia which rarely follows trinitrotoluene jaundice is due to inability of a damaged liver to supply some factor essential for hæmopoiesis? In any case, there seems to be justification for treatment with liver extracts during the jaundice. The best line of treatment of the developed condition is not easy to lay down, but the importance of prophylaxis is well recognised.[3] At the filling factory the precautions include protective overalls and gloves for workers, with supervision of washing of hands, arms, face, and neck after work; ventilation is augmented by a system of vacuum pipes with openings near every worker to remove dust and fumes; proper meals are provided in a canteen, and workers are encouraged to take outdoor exercise and a healthy diet. Work in actual contact with T.N.T. is alternated with other work, and weekly medical inspection is carried out to detect any signs of intoxication. Unfortunately patients may report sick to their home doctor without notifying the factory medical officer, and if they do not mention that they have worked with trinitrotoluene catarrhal jaundice or other lesion may be wrongly suspected and treatment delayed. The earliest possible diagnosis and removal of patients from contact seem to be essential if the present considerable mortality and morbidity are to be reduced.

SUMMARY

Seven cases of T.N.T. jaundice occurred in workers in an ordnance filling factory, of whom two have died.

The jaundice appeared within 6 months of beginning work at the factory, and was a typical orange yellow.

The associated symptoms were nausea, anorexia and epigastric discomfort; liver enlargement and pyrexia were absent, distinguishing the condition from catarrhal jaundice, with which it is likely to be confused.

Autopsy on the fatal cases revealed acute yellow atrophy of the liver and hyperplasia of the bone-marrow in one patient, and subacute liver necrosis and a hyperplastic bone-marrow in the other, whose death was due to aplastic anæmia.

Treatment was by glucose, insulin and vitamin C.

Prophylaxis is important, the main measures being protection of the skin, washing, adequate ventilation of factories, and a healthy life and full diet for workers.

I wish to thank my colleagues and the senior medical staff of the hospital for their help and encouragement.

2. Moore, B. *Proc. R. Soc. Med.* 1916–17, **10**, 37.
3. See *Lancet*, 1916, **2**, 1026 and 1021; and Legg, T. Industrial Maladies, London, 1934.

IMPROVED WEBSTER TEST FOR T.N.T. DERIVATIVE IN URINE

JOHN INGHAM, F.I.C.
BIOCHEMIST TO THE MEDICAL UNIT, SCHOOL OF MEDICINE, CARDIFF

THE test for trinitrotoluene (T.N.T.) derivative in the urine is that introduced by Webster [1] and later improved both by him [2] and by Tutin.[3] By a simple modification the sensitivity of the test may be enhanced and a positive result more frequently obtained. This modification consists simply in boiling the mixture of urine and sulphuric acid before adding the ether, thereby ensuring a more thorough extraction of the T.N.T. product from the urine. The test is further improved, and the chances of detection increased still more, by using four times the quantity of urine recommended by Webster. Here is the improved test in detail.

Place 50 c.cm. of urine in a convenient sized beaker (400 c.cm.) and add 50 c.cm. of 20% (by volume) sulphuric acid (1 part conc. H_2SO_4 + 4 parts H_2O). Mix.

Place beaker on tripod, supported by wire gauze, and heat over bunsen flame till the liquid boils.

Boil for one minute; allow to cool. Cooling may be hastened by running cold water over outside of beaker.

After cooling pour the mixture of urine and acid into a separatory funnel of 200 c.cm. capacity and add 50 c.cm. of ordinary (methylated) ether. Shake up well and then allow to settle for about 15 minutes. The lower layer of urine and sulphuric acid is next run off by removing the top stopper and opening the lower tap.

The ethereal solution of acidified urine remaining in the separatory funnel is then washed twice with 1% aqueous solution of sodium carbonate. This is done as follows. Add 20–25 c.cm. 1% aqueous sodium carbonate, shake up, and after allowing to settle for 5–10 min. run off the lower layer. Repeat. (If the person has been taking purgatives such as rhubarb, senna, cascara, phenolphthalein — which yield anthraquinone derivatives—the sodium carbonate solution will show a reddish violet colour.)

After this treatment with sodium carbonate the ethereal solution in the funnel is washed with water, as follows. Add 50 c.cm. tap water, shake up, allow to settle for 15 min., then run off the lower layer as before. (Occasionally a troublesome emulsion forms in the ethereal extract while washing with water but it is easily dispersed by adding a few drops of absolute alcohol and shaking gently.)

Now place 5 c.cm. of the ethereal extract, so washed and prepared, in a test-tube and quickly add, without shaking, 5 c.cm. of a 5% alcoholic solution of potassium hydroxide (5 g. caustic potash dissolved in 100 c.cm. of methylated spirit or absolute alcohol). A violet cloud indicates a positive result. The liquid in the test-tube should be watched carefully, for the colour develops quickly and just as quickly fades. The intensity of the colour varies from the faintest tint to a deep violet according to the amount of T.N.T. in the urine.

The unused ethereal extract remaining in the separatory funnel need not be thrown away but may be collected and later separated off from any T.N.T. by distillation. It may then be used again in other tests.

For the routine everyday urine examination of workers in T.N.T. factories the technique may be simplified as follows.

Apparatus required: Two ordinary test-tubes (7 in. × ¾ in); Bunsen burner or spirit lamp.

Reagents required: 20% (by volume) sulphuric acid; ordinary (methylated) ether; 5% alcoholic solution of potassium hydroxide (freshly prepared).

Place about 10 c.cm. of urine into one test-tube; add about an equal quantity of the 20% sulphuric acid; shake and bring to the boil; cool thoroughly under the water tap.

When cold add about 10 c.cm. of the ether and shake well; allow to stand a few minutes till ether floats to the top. Pour some of the supernatant ether into the other test-tube and to it add about 2 c.cm. of the 5% alcoholic potassium hydroxide solution. A dirty reddish purple colour develops *at once* if T.N.T. is present. The tint varies from faint to

1. Webster, T. A. *Lancet*, 1916, **2**, 1029.
2. Webster, *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 53, 1921.
3. Tutin, F. *Lancet*, 1918, **2**, 554.

very deep according to the amount of T.N.T. present and appears quickly and just as quickly fades. If no T.N.T. be present a light brown colour only results and persists.

With this simplified technique the test is sensitive to 1 part in 10,000. It does not exclude anthraquinone derivatives (from the purgatives mentioned), which give a similar but pinker colour which persists.

TRIGEMINAL NEURALGIA

A SUGGESTED BASIS OF TREATMENT

W. E. ADAMS, M.B., M.SC. N.Z.
LECTURER IN ANATOMY, UNIVERSITY OF LEEDS

WILLIAM ROBINSON, M.B. LEEDS
SENIOR HOUSE-PHYSICIAN, GENERAL INFIRMARY, LEEDS

THE view, which many have held, that the paroxysms of trigeminal neuralgia are ischæmic in origin has never received convincing support. Even Leriche (1939), who favours this view, admits that the treatment of trigeminal neuralgia by sympathectomy, with the object of producing a vasodilatation of the trigeminal vessels, offers little hope of success. Nevertheless there is increasing evidence, both physiological and pathological, that the normal functioning of peripheral nerves is dependent upon the integrity of their blood-supply. Koch (1926) has shown that ischæmia of mammalian nerve produces significant physiological changes in the nerve, and that when the ischæmia disappears the nerve returns again to normal. Should the ischæmia persist, as in pathological occlusion of the vasa nervorum, more permanent effects result (Woltman and Wilder 1929, Randall 1938, and others).

Unfortunately, little is known concerning the detailed vascular supply of peripheral nerves. In the trigeminal, however, the Gasserian ganglion has been shown to be very vascular (Stöhr 1928) and to receive its supply from the internal carotid artery, while the remainder of the nerve resembles nerves elsewhere in receiving a regional blood-supply (Grigorowsky 1928). Since physiological and pathological evidence suggests that the blood-supply of any nerve is not only adequate but also essential for its normal requirements, it seems to us that ischæmia of a nerve, whether angiospastic or otherwise should be considered as a possible factor in peripheral nervous lesions where no other obvious cause presents itself. In the case of trigeminal neuralgia this hypothesis deserves the fullest investigation, and should not be rejected merely because of the failure of cervical sympathectomy.

The success which has recently been obtained in angiospastic conditions such as Menière's disease (Atkinson 1941), and even in one case of trigeminal neuralgia (Cooper 1938), by exhibiting vasodilator drugs over long periods encouraged us to explore the possibilities of this form of treatment in trigeminal neuralgia. In the first cases which were available we tried to induce the paroxysmal pain by administering the vasoconstrictor drugs, adrenaline and benzedrine, believing that its production in this way would suggest an angiospastic basis. Abolition, then, of both the induced and spontaneous pains would afford not only circumstantial support for our theory but also a new means of alleviating the pain in those cases which show such vasomotor responses. Because it has been found in Menière's disease and nerve deafness to be the most effective vasodilator, we relied mainly on nicotinic acid, and not on acetylcholine which was used by Cooper in trigeminal neuralgia. In cases 4–7 treatment with nicotinic acid was begun at once in an attempt to stabilise the dosage. It was found, however, that there is considerable individual variation in the response to this drug, and, unless relief was obtained earlier, it was at times necessary to increase the dosage until signs of generalised vasodilatation appeared.

CASE-RECORDS

CASE 1.—A woman, aged 52, with 2½ years' history of supraorbital pain of typical paroxysmal type, accompanied by a facial tic. Thorough examination revealed no cause for the symptoms. Blood-pressure 135/95 mm. Hg.

During an intermission of the symptoms a preliminary injection of 0·7 c.cm. of 1 in 1000 adrenaline induced, almost immediately, supraorbital pain—resembling in every respect the usual spontaneous pain—with tenderness over the supraorbital notch. During a subsequent spontaneous paroxysm 50 mg. nicotinic acid was given by mouth with no apparent effect. After 40 minutes a further 50 mg. was administered; this resulted in some diminution of the pain after 20 minutes, but did not abolish it. A capsule of amyl nitrite was then given. This produced striking, almost instantaneous relief—the pain disappeared completely, to the delight of the patient who was able to sleep without a sedative for the first time in many weeks. Although she was convinced of the efficacy of amyl nitrite, it was nevertheless probable that it merely augmented the effect of the previous subliminal doses of nicotinic acid. Treatment by nicotinic acid, 50 mg. t.d.s., was then continued, and during the 10 days that the patient was under our observation there was no recurrence of the pain. Injections of adrenaline during this period were ineffective. As in Cooper's case, the facial tic was not influenced by the treatment.

CASE 2.—A woman, aged 68, with 2½ years' history of trigeminal neuralgia involving the second division of the nerve. Blood-pressure 150/105 mm. Hg.

At first the patient was given benzedrine sulphate, 5 mg. b.d. The paroxysms became considerably more frequent, and she complained bitterly of their increasing severity. On two occasions a capsule of amyl nitrite relieved the paroxysms. The benzedrine was then stopped and nicotinic acid given, 50 mg. b.d. Over a number of days this treatment reduced the paroxysms in frequency (from 15–20 a day to 3 or 4) and in severity.

CASE 3.—A man, aged 48, with 5 years' history of trigeminal neuralgia involving the second division of the nerve. After a remission of 2 years the pain had returned with its original severity. It appeared 5 or 6 times a day and lasted 1–3 hours. Blood-pressure 130/90 mm. Hg.

Treatment with nicotinic acid, 50 mg. b.d., was started at once and had a definite effect. Apart from one paroxysm shortly after the treatment began, the patient had complete freedom from pain for 4 days. During this time attempts were made to induce the pain by injection of adrenaline but without effect. After 4 days the nicotinic acid was stopped and he was put on benzedrine sulphate 5 mg. t.d.s. Attacks of pain recommenced and increased gradually in frequency and severity as the benzedrine was continued. Attempts to relieve the paroxysm during this time by giving acetylcholine were without success, probably because it was unable to counteract the constrictor effect of the benzedrine.

CASE 4.—A woman, aged 49, with 1 year's history of paroxysmal neuralgia of the second division of the trigeminal nerve. Blood-pressure 138/90 mm. Hg.

Treatment with nicotinic acid, 50 mg. b.d., was begun on July 14, 1941. This was without effect. The dose was then increased to 50 mg. q.d., which produced considerable relief; further improvement resulted on again increasing the dose to 75 mg. t.d. The dosage has subsequently varied between 75 mg. t.d. and 75 mg. q.d. according to the subjective responses. This resulted in progressive improvement leading to almost complete relief by the end of the second month of treatment. This has since been maintained, and treatment is still continuing.

CASE 5.—A woman, aged 62, with neuralgia of the first and second divisions of the trigeminal nerve over a period of several years. The pain was typically paroxysmal with short intermissions of almost complete relief. Blood-pressure 140/85 mm. Hg.

Treatment with nicotinic acid, 50 mg. b.d., began on June 19, 1941. At the end of a month the paroxysms had lessened in frequency and severity. An increase during the second month to 50 mg. t.d. resulted in further improvement, the patient sleeping better than she had for several months. A further increase to 50 mg. q.d. has resulted in almost complete relief except for very occasional "stabs" of pain. Treatment is continuing.

CASE 6.—A woman, aged 39, who had been a nurse, with trigeminal neuralgia involving the second and third divisions. Unerupted wisdom teeth had been removed with no effect. Paroxysms occurred every 2–3 weeks and lasted from 1–2 hours to 10 days. Blood-pressure 130/80 mm. Hg.

She was first seen on Sept. 3, 1941, during the onset of a paroxysm, which responded dramatically to inhalation of amyl nitrite, disappearing in a little over a minute. She was then placed on nicotinic acid, 50 mg. q.d.; in just over 3 weeks this has considerably reduced the severity but not the frequency of the paroxysms. Treatment is continuing.

CASE 7.—A man, aged 66, with 1 year's history of typical paroxysmal neuralgia of the second division of the trigeminal nerve. For the last 2 months of this period paroxysms had been occurring daily. Blood-pressure 130/85 mm. Hg.

Treatment with nicotinic acid, 50 mg. q.d. began on Sept. 24, 1941, and resulted in complete relief after 10 days. Since then there has been no recurrence of pain, this period of relief being considerably longer than any previous period of complete remission. The treatment, which is continuing, has been particularly effective in this case and has considerably impressed the patient himself.

SUMMARY

On the hypothesis that the paroxysms of trigeminal neuralgia are ischæmic in origin we have attempted the treatment of this condition by vasodilator drugs.

We treated 7 patients—2 men and 5 women—whose ages ranged from 39 to 62 and in whom attacks had occurred over periods of 1–5 years.

Nicotinic acid was used in doses ranging from 50 mg. twice daily to 75 mg. four times daily. In every case there was improvement, sometimes amounting to complete relief. This improvement has been generally maintained. In 2 cases a paroxysm at its height was relieved in a few minutes by an inhalation of amyl nitrite.

Vasoconstrictor drugs (adrenaline, benzedrine) were given in 3 cases; in one, adrenaline provoked an attack before treatment with nicotinic acid had begun but failed to do so afterwards; in the other 2, benzedrine increased the number and severity of the paroxysms.

We wish to thank Prof. J. le F. Burrow and Prof. T. Talmage Read of the University of Leeds for allowing us to see cases of trigeminal neuralgia.

REFERENCES

Atkinson, M. (1941) *J. Amer. med. Ass.* **116**, 1753.
Cooper, M. J. (1938) *Amer. J. med. Sci.* **195**, 83.
Grigorowsky, I. M. (1928) *Z. ges. Anat.* **1**, 87, 728.
Koch, E. (1926) *Z. ges. exp. Med.* **50**, 238.
Leriche, R. (1939) The Surgery of Pain. Translated by A. Young, London.
Randall, L. O. (1938) *J. biol. Chem.* **125**, 723.
Stöhr, P. (1928) v. Möllendorff's Handbuch der mikroskopischen Anatomie des Menschen, Berlin, vol. IV, part 1, p. 213.
Woltman, H. W. and Wilder, R. M. (1929) *Arch. intern. Med.* **44**, 576.

INFLUENCE OF MENSTRUATION ON SUSPENSION STABILITY OF RED CELLS

RAYMOND GREENE, D.M. OXFD,

PHYSICIAN TO THE E.M.S.; SENIOR CLINICAL ASSISTANT WITH CHARGE OF ENDOCRINE CLINIC, WESTMINSTER HOSPITAL

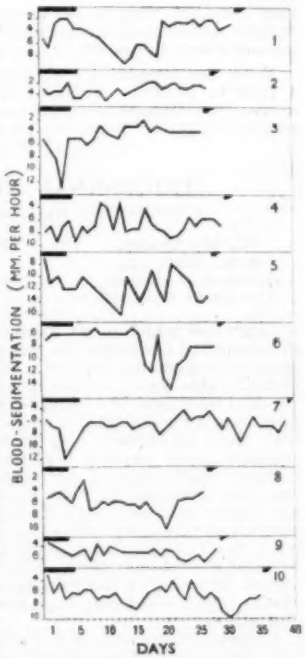
THE measurement of the suspension stability of erythrocytes by their sedimentation-rate has become so important in checking the course of so many diseases that any factor, other than the disorder under observation, which may influence the rate might cause errors in prognosis and treatment. Such extraneous influences are intercurrent infections and anæmia. Infections are usually easy to exclude by clinical observation, while compensation for anæmia is easy.

It was observed by Hippocrates that the sedimentation-rate of the erythrocytes of pregnant women was abnormally high, an observation which led to the bleeding of these unfortunates even into the nineteenth century. This and other considerations have given rise to a suspicion that one or more of the endocrine glands may affect the rate, either by changing the fibrinogen-globulin content of the plasma proteins or by altering in some other way the electrical conditions at the erythrocyte-plasma interface. Should the offending endocrine factors be either œstrone or progesterone one would expect to see a constant change in B.S.R. during the menstrual cycle. That such a change does occur has often been guessed or assumed, but only three references to the subject have been published. Whitby and Britton[1] said that the sedimentation-rate is increased slightly at the menses. Day[2] asked "Why do a few women show an exalted blood-sedimentation rate during their menses, whereas most women are entirely unaffected?" Lockett,[3] on the other hand, stated that the velocity reached a maximum a day or two before the beginning of menstruation. I cannot find that anyone has tried to settle the question by direct experiment.

1. Whitby, L. E. H. and Britton, C. J. C. Disorders of the Blood, London, 1939.
2. Day, G. *Lancet*, 1940, **1**, 1160.

INVESTIGATION

Fifteen volunteers were carefully questioned and examined. Of these, 10 were finally chosen as above suspicion of harbouring any abnormality known to influence the suspension stability of their red cells. With one exception they were nurses whose medical history was already known and who had previously undergone periodical medical examination. Their ages ranged from 20 to 35, the average being 23. All claimed to have normal and regular periods, but in fact there was considerable variation in the length of their menstrual cycles.



The B.S.R. of each was measured every day of a complete cycle by Westergren's standard technique. Correction for anæmia was unnecessary in these cases. The results are shown in the figure, which make it clear that no *constant* alteration in erythrocyte stability is associated with any phase of the cycle—a fact evident without statistical analysis. It is possible, however, that so short a series may fail to bring out an average change. In order to test this possibility the cycle of each subject was divided into four phases: phase 1, which included menstruation, was from the first day of the cycle to the midpoint between this and the presumed date of ovulation; phase 2 was thence until ovulation; phase 3 covered the first half of the luteal phase; and phase 4, the second half of the luteal phase, ending at menstruation. The average B.S.R. for each period was calculated for each subject (see table).

Case	Phase 1	2	3	4	Av.	Case	Phase 1	2	3	4	Av.
1	3·5	6·5	4	2·5	4·125	7	7·5	6	6	6·5	6·5
2	3·5	4	3	2·5	3·25	8	5	5·5	6·5	6	5·75
3	7	4·5	3·5	4	4·75	9	4	4·5	4·5	5·5	4·625
4	8	6	7·5	6·5	7	10	5·5	6·5	6	8	6·5
5	10·5	13	12	11·5	11·75	Av.	6·05	6·25	6·25	6·15	6·175
6	6	6	9·5	8·5	7·5						

These figures make it clear that there is no significant variation at any period of the menstrual cycle.

SUMMARY

The red-cell sedimentation-rate was measured on every day of the menstrual cycles of 10 healthy women. The figures obtained show that, contrary to general belief, there is no change in the suspension stability of erythrocytes characteristic of any phase of the cycle.

I wish to thank the Westminster and Middlesex Hospital nurses who allowed themselves to be subjected to inconvenience by this investigation, and Prof. S. Zuckerman and Mr. P. C. Williams, D.Sc., for their advice on the presentation of the figures.

3. Lockett, M. F. *Brit. J. Tuberc.* 1937, **31**, 31.

CONCENTRATED SERUM IN HEAD INJURIES

J. W. ALDREN TURNER, D.M. OXFD, M.R.C.P.
NEUROLOGIST, E.M.S.

A CONCENTRATED solution of human serum was suggested as a valuable agent in reducing raised intracranial pressure by Hughes, Mudd and Strecker in 1938. They made observations on patients with raised pressure, chiefly sufferers from cerebral tumour, and found that the reduction of pressure continued for longer after injection of serum than after 50% sucrose solution. This use of concentrated serum seems to have been largely neglected, probably because of difficulty in obtaining it. Now, as a result of the M.R.C. blood-transfusion service, concentrated serum can be reconstituted from the dried serum which is prepared on a large scale for ease of storage and transport. I have used concentrated serum as a means of reducing intracranial pressure in a small series of patients suffering from head injuries.

METHOD

Five-times concentrated serum has been used; this is made by adding 40 c.cm. of sterile distilled water to the dried solids obtained from 200 c.cm. of human serum. There is some difficulty in getting the dried serum to dissolve in this small quantity of water but if the mixture is shaken well and left in the incubator for an hour, solution will take place. In each case 40 c.cm. of reconstituted concentrated serum has been injected intravenously. It is important to keep the serum at blood temperature till the injection is given, otherwise the solution becomes viscid and difficult to inject; 2–3 minutes have usually been taken for the injection of 40 c.cm. Since the serum is obtained from pooled blood no preliminary blood-grouping is necessary.

The cases treated have been men with recent closed head injuries in whom severe headache with a high cerebrospinal-fluid pressure has been present. They have previously been treated by dehydration, magnesium-sulphate enemas and ordinary analgesics. Serum has only been used when these measures have failed to relieve their symptoms. Cases of this type are comparatively uncommon, and care must be taken that compressive lesions are not present before serum is administered.

Repeated lumbar punctures have been used to estimate fall of pressure, though these have not been repeated as often as scientific accuracy would demand because of the condition of the patients. This method was criticised when Hughes and his colleagues (1938) originally presented their results to the American Neurological Society, and more recently by McKissock (1941), the main criticism being that the fluid may continue to escape through the hole in the dura made at each puncture and that this leakage may cause a fall of pressure. Hughes and his colleagues did a control series of experiments in dogs, using continuous lumbar-puncture recording, and found that their results from repeated puncture were confirmed by the continuous record. We have found that in late punctures after serum administration the C.S.F. pressure may rise after an earlier fall, and this suggests that continued leakage of C.S.F. cannot be an important factor in determining the fall of pressure. A continuous lumbar-puncture record has scientific advantages over repeated punctures, but I have not felt justified in attempting it in the rather restless post-traumatic patients to whom serum has been given.

RESULTS

Blood dilution.—The degree of dilution of the blood has been estimated by hæmatocrit readings. All the blood samples taken from a patient have been centrifuged at the same time at the end of the period of observation so that comparable readings would be obtained. Examples of hæmatocrit readings in these cases, expressed as percentage of packed cells, were:

Before serum	..	52	..	42·5	..	41	..	47	..	47
Time after serum											
70 min.	..	49	..	41	..	36	..	37	..	47
3 hr.	..	..	..	41	..	..	..	43	..	..
6 hr.	..	46	..	..	..	37	..	44	..	47
8 hr.	..	..	..	42	..	40	..	..	..	..
18 hr.	..	52	..	..	..	..	..	..	..	..

It will be seen that about 5% dilution of the blood had usually occurred after 70 min. Sufficient readings have not been made yet to enable us to say for how long dilution continues or when the hæmatocrit readings return to normal. In the last case no dilution of the blood took place.

Lumbar-puncture pressure.—A group of 6 patients were treated in this way. Lumbar puncture pressures, expressed in mm. of water, were as follows:

Case no.	..	1	2	3	4	5	6
Before serum	..	280	200	275	235	300	300
Time after serum							
70 min.	..	230	150	80	145	..	300
3 hr.	..	..	180	75	..	250	300
6 hr.	..	150	..	110	..	300	..

In 5 cases there was a fall in C.S.F. pressure. In case 6 the pressure was very high at the beginning and no fall was obtained, and in this case also no dilution of the blood was shown by hæmatocrit readings. It is possible that a larger amount of serum should have been given to this man. The most considerable fall of pressure was obtained in case 3 where it fell from 275 to 80 mm. in 80 min. and remained at 75 mm. 3 hours after injection; 6 hours afterwards it had risen to 110 mm.

Clinical results were good except in case 6 where the lumbar-puncture pressure remained unaltered and the clinical condition unchanged. In 4 of the cases severe headache was the outstanding symptom and was dramatically relieved, though it was noticeable that the lumbar-puncture pressure had fallen before the headache started to decrease; usually the pain became less some 70–90 minutes after the serum had been injected, and had stopped in 2 hours. In 2 cases there was never any return of headache, but in the other 2 there was some return of pain a few days later. In case 5 headache was not an outstanding feature but this man was abnormally drowsy with rapidly developing focal signs due to contusion of the left parietal lobe. His drowsiness became less and there was no further increase in his parietal syndrome after the administration of serum. The pulse-rate remained unchanged after serum administration even when, as in most of the cases, it had been abnormally slow before serum was given. This supports Denny-Brown's (1941) thesis that the slow pulse-rate in these cases is not the direct result of raised intracranial pressure but is due to some other factor—he suggests medullary contusion.

No untoward result of serum injection has been seen except that one man developed local urticaria in the arm into which the injection was being given. The patients have been noted to be unusually constipated after treatment, presumably as a result of withdrawal of fluid from the bowel.

Concentrated human serum has thus undoubtedly been of value in reducing the raised intracranial pressure and in improving the clinical condition, especially in relieving headache, in this small group of acute head injuries. The protein content of the injected serum is high—30–35 g. per 100 c.cm. according to our estimations—and from the hæmatocrit studies of the blood after injection of the serum it is evident that dilution of the circulating blood occurs, presumably as a result of the osmotic properties of the serum. This hydration of the blood occurs by removal of fluid from all parts of the body, and the fall in lumbar-puncture pressure shows that either the tissue fluids of the nervous system or the C.S.F. have had fluid removed from them: from which of them is still undetermined.

The value of hypertonic sucrose solution has not yet been compared in this hospital with that of concentrated serum, but Hughes and his colleagues in their studies had no doubts of the greater efficacy of concentrated serum.

SUMMARY

Concentrated serum was used in 6 cases of recent closed head injury as a means of reducing intracranial pressure.

Dilution of the blood occurred and in 5 patients there was a fall of pressure in the cerebrospinal fluid.

The clinical results, especially relief of severe headache, were good and the intravenous injection of concentrated

serum seems to be indicated in cases of recent closed head injury where the C.S.F. pressure is high.

I wish to thank Mr. Harvey Jackson, director of this E.M.S. head-injury centre, for permission to treat patients under his care, and Dr. E. A. Carmichael for his assistance in the preparation of the paper.

REFERENCES

Denny-Brown, D. (1941) *Lancet*, **1**, 371.
Hughes, J., Mudd, S. and Strecker, E. A. (1938) *Arch. Neurol. Psychiat., Chicago*, **39**, 1277.
McKissock, W. (1941) Communication at British Society of Neurological Surgeons.
Wright, D., Bond, D. and Hughes, J. (1938) *Arch. Neurol. Psychiat., Chicago*, **39**, 1288.

HÆMOTHORAX FROM LEAKAGE OF A DISSECTING AORTIC ANEURYSM

SURVIVAL

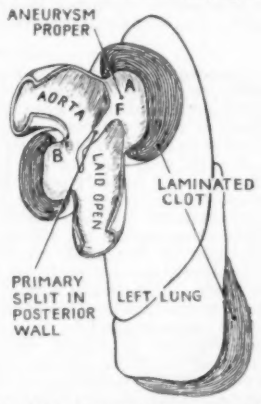
FELIX POST, M.B. LOND.
LATE HOUSE-OFFICER, WHIPPS CROSS HOSPITAL, LEYTONSTONE

SPONTANEOUS hæmothorax has been fully described by Jones and Gilbert (1936), Hopkins (1937), Perry (1938), and Davidson and Simpson (1940), who showed that the tearing of a vascular pleural adhesion was the commonest cause. Dissecting aneurysms of the aorta often rupture into the pericardium, but another common terminal event is the production of a hæmothorax, which is more often on the left side than the right. Cases of dissecting aneurysm are reviewed and discussed by Weiss (1935), Glendy, Castleman and White (1937) among others, and East (1939) has described the clinical features as they emerge from a survey of the literature. Survival for more than a few days after the production of a hæmothorax due to the leaking of a dissecting aneurysm, as in the following case, does not seem to have been described.

An unemployed man, aged 51, was admitted to Whipps Cross Hospital on March 17, 1941, his doctor having made a diagnosis of left pleural effusion. In 1924 he had been diagnosed at the London Hospital as having disseminated sclerosis of two years standing; his blood Wassermann reaction was negative. Subsequently his symptoms had become more severe, and for many years he had been confined to his room owing to difficulty in walking.

On admission, he gave a 4 days' history of shivering, slight cough and a little sputum, which he swallowed. On the day before admission, while groping about in his room, he had stumbled and hit his chest in the region of his left armpit against a bedpost. There was only a little pain, which had become less since the accident. He had not experienced any shortness of breath. He was pale and anxious, and showed signs of disseminated sclerosis—spastic paraplegia, stiffness of hands, pupil abnormalities, and rigidity of the trunk, which made examination of the back of the chest somewhat difficult. Occasionally rapid pulsations were visible in the epigastrium, about 160 per minute, but these bursts did not alter the radial pulse-rate of about 80. There was no fever and no abdominal rigidity. In the chest there was impaired percussion note, distant bronchial breathing and bronchophony in the left lower zone of the back, suggesting consolidation of the left lower lobe, but a radiogram taken two days later showed opacity of the whole left side of the chest, which suggested fluid though there was no mediastinal displacement. Clinically, some bulging of the left chest had developed, with a dull percussion note all over the back and lower part of the front, diminished breath sounds, absent vocal fremitus and whispering pectoriloquy. On needling the chest, fluid indistinguishable from blood was obtained; this did not clot on standing and proved sterile on culture. No fracture of ribs was seen in a further radiogram. On March 25, 500 c.cm. of blood was aspirated from the left pleural cavity, when the patient became collapsed, pale and sweating, and the procedure had to be stopped. The patient's cough ceased; he never produced any sputum. Urinary incontinence and bedsores began to develop. On April 8 a further 600 c.cm. of blood was aspirated, and at the same time 400 c.cm. of air was introduced into the left pleura. A subsequent radiogram still showed opacity in the left lower zone with mediastinal displacement to the left. No abnormal signs in the upper lung-zone or about the aortic knuckle were revealed by the partial artificial pneumothorax. The patient's general condition was so poor that further investigation into the cause of his hæmothorax was neither feasible nor justifiable. In spite of intensive treatment with iron he became increasingly pale, the bedsores became more and more offensive, and after developing a swinging temperature he died on May 23, nine weeks after admission.

Autopsy carried out by Dr. Keith Simpson 12 hours after death showed that the cause of death was toxæmia from extensive pressure sores secondary to disseminated sclerosis, evidence of which was found in the brain. There was no fluid in the left pleural cavity, but the lobes of the left lung which showed no disease otherwise, were compressed by aseptic blood-clots. One of these was lying in the costophrenic sulcus, while the other one was found in the left paravertebral gutter, partly adherent to the third part of the aortic arch. This clot was laminated, and about 3 in. in diameter. The arch of the aorta, when opened, presented the appearances of hyaline necrosis of the media, without atheroma or syphilitic scarring. There was a healed split of the intima near the end of the third part of the arch, and a short dissection, 2¼ in. long, had occurred, producing a local subadventitial aneurysm which was adherent to the clot previously described.



In the figure points A and B of the aneurysmal bulge at the end of the third part of the aorta are complementary. The wall, consisting of adventitia, leaked, causing the hæmothorax and the residual clots over lung apex and base. The scar in the base of the primary split consists of media plus adventitia, the intima alone being split at all points except F.

There is little doubt that, if it had not been for his disseminated sclerosis, the patient would have survived this accident. There is a history of slight injury to the chest, but as this occurred on the third day of respiratory symptoms, trauma was not accepted as a cause of the dissecting aneurysm or of its rupture. Moreover there was no history suggestive of acute blood loss, though in all 1100 c.cm. of blood was evacuated from the chest, and signs of effusion became gradually more conspicuous after admission. It seems justifiable to assume that slow leakage from the dissecting aneurysm took place, and that this allowed the patient to survive the catastrophe, without producing either the dramatic clinical developments seen in most cases of spontaneous hæmothorax, or the severe pain usually, but not always (Hamburger and Ferris 1938), associated with dissecting aneurysm.

I wish to thank Dr. Kenneth Perry for his help and advice; Dr. Keith Simpson for allowing me to make use of his post-mortem findings and the diagram drawn by him; and Mr. O. R. M. Kelly, medical superintendent of Whipps Cross Hospital, for permission to publish the case.

REFERENCES

Davidson, M. and Simpson, C. K. (1940) *Lancet*, **1**, 547.
East, T. (1939) *Ibid.* **2**, 1017.
Glendy, R. E. Castleman, B. and White, P. D. (1937) *Amer. Heart J.* **13**, 129.
Hamburger, M. Jun. and Ferris, C. B. Jun. (1938) *Ibid*, **16**, 1.
Hopkins, H. V. (1937) *Amer. J. med. Sci.* **193**, 763.
Jones, O. R. and Gilbert, C. L. (1936) *Amer. Rev. Tuberc.* **33**, 165.
Perry, K. M. A. (1938) *Lancet*, **2**, 829.
Weiss, S. (1935) *Med. Clin. N. Amer.* **18**, 1117.

On Oct. 17 Lord Rosebery opened the Paderewski Polish Hospital which stands in the grounds of a big general hospital in Midlothian and has 80 medical beds which are open to Polish civilian and military patients. Surgical wards and operating theatres in the main building complete the hospital, which will also offer teaching facilities to the Polish medical faculty.

". . . Every age is, I suppose, an age of doubt from some point of view . . . The Mid-Victorian age believed in Moses and doubted Darwin. The present age believes in Freud and doubts Moses."—Y. Y., *New Statesman*, Oct. 25, p. 375.

A CASE OF PTERYGO-NUCHAL INFANTILISM

(TURNER'S SYNDROME), WITH POST-MORTEM FINDINGS

E. P. SHARPEY-SCHAFER, M.R.C.P.

FIRST ASSISTANT IN THE DEPARTMENT OF MEDICINE, BRITISH POST-GRADUATE MEDICAL SCHOOL

AN unusual syndrome, not previously described, was reported by Turner in 1938. His 7 cases were all females and showed the triad of infantilism, webbing of the skin of the neck, and cubitus valgus. Apart from the curious appearance due to the webbed neck, the main interest of this condition lies in the associated infantilism. Turner was of the opinion that the anterior pituitary was to blame, and thought his cases corresponded to the Lorain-Levi type of dwarfism. The present paper describes a case who has been studied for some years and whose death from tuberculosis has afforded the first opportunity for pathological examination.

CASE-HISTORY

A woman, aged 21, was first seen on Oct. 5, 1937. Her birth had been normal and she had walked, talked and teethed at the normal age. A deformity of her neck had been noticed since birth. Secondary sex characteristics had not developed and she had never menstruated. Flushes, 3–4 a day, had been present for 3 years. She was quite intelligent, but preferred childish pursuits. The mother, father and two younger siblings were normal. On examination her height was 56½ in. and weight 112 lb. She appeared a short heavily built girl and was not disproportionate, though the arms seemed longer than normal. The photograph reproduced in fig. 1 was taken later when she had lost much weight from tuberculosis. The most striking feature was a deformity of the neck; from the mastoid process to the acromion was a well-marked wing which appeared to consist of skin and subcutaneous tissue only. The trapezius muscle was normal and the movements of the neck were full in flexion and extension, while lateral movement was slightly limited. The hair line was low and the skin was freely movable over the lower part of the occipital bone. The concha of the left ear projected laterally and anteriorly, and the upper parts of both auricles were bound to the margin of the scalp. Kyphoscoliosis with prominence of the sternum was present, and there was an increase of the carrying angle of the elbow. The skin was smooth and normally moist, and there were a number of pigmented moles on the face and body. There was no axillary hair, but a scanty growth was present in the pubic region. The breasts were quite undeveloped, no glandular tissue being palpable. The labia were infantile, the vagina short and small, and the cervix was small but dilated easily when full gynæcological investigation was done. It was found that the uterus was 1 in. long and the walls very thin: uterine scrapings were too scanty for histological section. The ovaries could not be felt. Biopsy of the vaginal mucosa showed that the epidermis was flat, and there was little cellular activity in the malpighian rete. There was considerable lymphocytic infiltration underlying the epidermis, and mucous glands were inconspicuous. Blood count and blood chemistry were normal. X rays showed a normal cervical spine, sella turcica and pelvis; the distal epiphyses of the radius and ulna were ununited, and the epiphyses of the second and third lumbar vertebræ were not fully united.

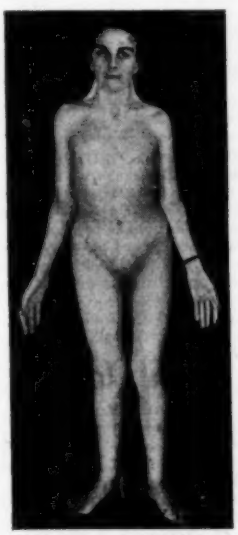


FIG. 1—Turner's syndrome.

Thyroid function.—Basal metabolic rate was +7% blood-cholesterol 160 mg. per 100 c.cm., and the electrocardiogram was normal. Injection of a pituitary thyrotrophic extract (Sharpey-Schafer and Schrire 1939a) caused a rise of temperature and pulse on the sixth day; the thyroid became enlarged and tender and the B.M.R. rose to +43%.

Carbohydrate metabolism.—A sugar-tolerance test showed a fasting blood-sugar of 71 mg. per 100 c.cm. and 130, 106, 96, 93 mg. % at 30-min. intervals after the ingestion of glucose. After 10 days on a diet containing 35 g. of carbohydrate a day, the figures were 65, 184, 230, 172, 125, suggesting a normal response of the anterior pituitary to a low carbohydrate diet (Himsworth 1939).

FIG. 2—Klippel-Feil syndrome.

Gonadal function.—Urinary creatinine excretion was normal (Sharpey-Schafer and Schrire 1939b). A gonadotrophic pituitary extract was injected for 10 days, followed by a follicle stimulating extract for 14 days. Biopsy of the vaginal mucosa showed slight diminution of the sub-epithelial infiltration with small round cells. There were no other changes. Œstradiol benzoate, 100,000 I.B.U., was injected twice weekly, and 15,000 I.U. of œstriol daily by mouth were given for 9 months. At the end of 5 months the uterus had enlarged and there was intermittent uterine hæmorrhage. There was no development of the breasts or further development of body hair. After an interval of 3 months, the effects of large doses of testosterone propionate on her spontaneous flushes was studied. These data have been published elsewhere (Sharpey-Schafer 1940).

In August, 1940, she was readmitted to hospital complaining of loss of weight and fatigue for 2 months. She was found to be running an irregular fever and the spleen was palpable. The diagnosis remained obscure for some time, but eventually revealed itself as extensive tuberculosis of the abdominal cavity. Terminally there was a miliary spread.

Autopsy (Dr. T. H. Belt and Dr. Popjak) was performed 5 hours after death. The body was that of an extremely emaciated woman. There were many pigmented moles all over the body and two verrucæ pilosæ on the upper lip. There was a web on each side of the neck, running from the mastoid process to the acromion. The breasts were infantile. The heart and aorta were hypoplastic, the weight of the former being only 166 g. There was generalised (miliary) tuberculosis involving the lungs, intestines and peritoneum, liver, urinary bladder, left ureter and kidney, and long-standing tuberculous salpingitis with involvement of ovaries and uterus. The uterus, though filled by caseous material, was very small, 1¾ in. in length. Apart from a calcified nodule in the apex of the left lung, the oldest tuberculous lesion seemed to be that of the internal genitalia. The endocrine glands, apart from the ovaries, did not show any gross pathological changes. The left ovary could not be found in the masses of tuberculous granulation tissue.

Histology.—No functioning ovarian tissue could be distinguished in the right ovary. The endometrium was destroyed by tuberculosis. The histological appearances of the pituitary gland, thyroid and adrenals were not abnormal. The mammary glands consisted of simple and branching lactiferous ducts embedded in a dense collagenous tissue. The web of the neck consisted simply of a fold of the skin without muscle.

DISCUSSION

Webbing of the skin of the neck was first described by Kobylinski in 1883. Funke (1902) and Bussière (1902) reported single cases. Frawley (1925) described the condition in 2 sisters and 2 other females, and Chandler (1937) has reviewed the literature. Simple webbing of the neck must be distinguished from the similar webbing that may occur in the Klippel-Feil syndrome. Since the original description of this last condition in 1912, 133 cases have been reported (Rechtman and Horwitz 1940). In the Klippel-Feil syndrome synostosis of some or all of the cervical vertebræ, with

limitation of movement, is present, and although numerous other congenital abnormalities may be associated, infantilism has not been reported. A photograph of a girl of eleven with the Klippel-Feil syndrome is shown in fig. 2 for comparison. Apart from a similar webbing of the neck, this girl had kyphoscoliosis and the second, third and fourth cervical vertebræ were fused; she has since shown normal sexual development.

In simple webbing and in Turner's syndrome the cervical spine is always normal. The ætiology of web formation is obscure; some have attributed it to amniotic adhesions or bands, and Nageotte-Wilbouchewitch (1934) thought that it might be a form of atavism, since it occurs normally in the chimpanzee. MacCollum (1938) considers that the defect may arise about the third month of pregnancy, when the ventral and dorsal surfaces of the neck are long and the mastoid process is either lateral or in a direct vertical line with the region of the acromial process, and when the skin over the lateral surfaces of the neck is shortened. As the shoulders develop, it is possible for the skin to remain shortened and for a web to develop between the mastoid and acromion. He points out that the symmetrical nature of this deformity favours some such theory.

The clinical and pathological evidence in my case suggests that the infantilism was primarily of gonadal origin. Tests of anterior pituitary function and the histology of the gland were normal; the occurrence of flushing also suggests a primary gonadal defect (Albright, 1936). It is unfortunate that the ovaries were so extensively destroyed by tuberculosis, but this infection was clearly of comparatively recent origin and could not have been responsible for the infantilism. There was no breast development with prolonged œstrogen therapy, though there was considerable growth of the uterus. A congenital defect in the response of mammary tissue may have been present, or, as recent work (Gardner 1940) has shown, the combined action of several hormones might have been more successful than œstrogens alone. One of Turner's cases showed some mammary development with œstrogens. Multiple pigmented moles were also present in Turner's first case, though no mention is made of them in the other cases.

Nomenclature is always difficult in describing new syndromes, but Turner clearly deserves the credit for recognising that the condition is not simply an isolated rarity. "Pterygo-nuchal infantilism" might be preferred to the hybrid "pterygium colli" of Funke. It would be interesting to know if the condition has ever been seen in males or, as appears to be the case at present, whether the infantilism is always linked with the female gonad.

SUMMARY

A case showing webbed neck, infantilism, cubitus valgus and pigmented moles is described.

Tests for deficiency of anterior pituitary function were negative.

Histology of the pituitary, thyroid and adrenal glands was normal; the ovaries were destroyed by extensive tuberculosis.

It is suggested that infantilism in such cases is due to a primary defect of the gonads.

I thank the Chief Medical Officer, London County Council, for permission to publish this case.

REFERENCES

Albright, F. (1936) *Endocrinology*, **20**, 24.
Bussière, J. A. (1902) *Ann. Hyg. Méd. colon.* **5**, 686.
Chandler, F. A. (1937) *Amer. J. Dis. Child.* **53**, 798.
Frawley, J. M. (1925) *Ibid*, **29**, 799.
Funke (1902) *Disch. Z. Chir.* **63**, 162.
Gardner, W. V. (1940) *Proc. Soc. exp. Biol., N.Y. Med.* **45**, 835.
Himsworth, H. (1939) *Lancet*, **2**, 1.
Kobylinski, O. (1883) *Arch. Anthrop.* **14**, 343.
MacCollum, D. W. (1938) *New Engl. Med.* **219**, 251.
Nageotte-Wilbouchewitch, M. (1934) *Bull. Soc. Pédiat. Paris*, **32**, 683.
Rechtman, A. M. and Horwitz, M. T. (1940) *Amer. J. Roentgenol.* **43**, 66.
Sharpey-Schafer, E. P. (1940) *Lancet*, **1**, 161.
— and Schrire, I. (1939a) *Quart. J. Med.* **8**, 195.
— — (1939b) *Clin. Sci.* **4**, 185.
Turner, H. H. (1938) *Endocrinology*, **23**, 566.

CEREBROSPINAL FEVER WITH LOW BLOOD-PRESSURE

J. SHARKEY, M.D.
ASSISTANT MEDICAL OFFICER, NORTH-EASTERN HOSPITAL (L.C.C.)

A CASE of cerebrospinal fever presenting features resembling the Waterhouse-Friderichsen syndrome has recently been treated here.

Multipara, aged 40, eight months pregnant. History of headache, generalised aches and pains, sore throat, rigors and vomiting, of sudden onset fifteen hours before. On admission temperature 100° F., pulse-rate 134, regular but of poor volume. Moderate neck-rigidity and positive Kernig and Brudzinski signs. Nervous system otherwise normal; heart and lungs normal. Systolic B.P. 65 mm. Hg. Moderately profuse petechial rash on trunk and limbs. Careful auscultation of abdomen failed to reveal fœtal heart-sounds. Lumbar puncture gave clear fluid under normal pressure containing 3 cells per c.cm.; no organisms were grown from it. Blood-culture negative, but meningococcal complement-fixation test positive. Serum-potassium 21·3 mg.; sodium 292 mg. and chlorides (as NaCl) 549 mg. per 100 c.cm. After several hours the patient's condition had much deteriorated; she was now pale, weak and mentally confused; tongue dry and glazed. Rash much more extensive, purpuric on trunk, with large plaques up to one inch square on buttocks and thighs.

Given sulphapyridine 9 g. and glucose-saline 4–6 pints daily by mouth; 10 c.cm. of Eucortone was given intramuscularly after admission, repeated twice daily on the two following days and once daily for two further days, a total of 70 c.cm.

Eight hours after admission patient went into labour and delivered a stillborn male infant, autopsy on which revealed hæmorrhages beneath the visceral pericardium and into the lungs. Brain, cerebrospinal fluid and suprarenals normal.

After twenty-four hours patient had improved slightly; rational at times, pulse slower and B.P. 90/50 mm. Hg. Left ophthalmoplegia and 7th nerve palsy had developed and there was severe headache. Further lumbar puncture, done two days after admission, yielded turbid fluid under pressure, containing 21,000 cells per c.cm. During next four days prostration and mental confusion passed off slowly, tongue became moist and clean and though chemotherapy was stopped owing to vomiting after 36 g. of sulphapyridine had been given, signs of meningitis cleared up with residual left facial paresis, and cerebrospinal fluid became clear. Pulse-rate dropped gradually to normal and systolic B.P. rose successively to 105, 115, 130 and finally 145 mm. Hg. On stopping eucortone systolic B.P. fell again to 125, and has fallen still lower during convalescence.

Puerperium uneventful, except for retention of urine necessitating catheterisation for a week after delivery. Rash faded completely on trunk in seven days but many purpuric plaques on buttocks and thighs broke down to form circular and oval ulcers which healed slowly and left extensive scarring. Otherwise recovery was complete and patient was discharged eight weeks after admission.

COMMENTARY

The unusual feature of this case was a persistent low blood-pressure with no signs of increased intracranial pressure or changes in the cerebrospinal fluid. The character of the rash and the satisfactory response to eucortone make it probable that some damage was present in the suprarenals. Most of the cases of Waterhouse-Friderichsen syndrome hitherto recorded were in infants and children under two years, and the extreme collapse and cyanosis of lips and extremities noted in them was not seen here; but these signs occurred in cases where massive hæmorrhages were found in both suprarenals post mortem, and were presumably due to a severe degree of circulatory failure, which was at no period well-marked in the present case.

Investigation of the sodium, chloride and potassium content of the serum, in which changes are found in the more chronic form of suprarenal deficiency, are not likely to be of decisive aid in diagnosis in a disease in which vomiting and dehydration are so common. The same applies to a low level of blood-sugar which has been suggested as favouring the diagnosis.

A clear cerebrospinal fluid with little or no rise in pressure or cell content and free of organisms is the rule

in the Waterhouse-Friderichsen syndrome; but McLean and Caffey [1] have detected meningococci in smears of the petechiæ in 15 out of 18 cases of meningococcal bacteræmia with purpura, in 3 of which hæmorrhages were present in the suprarenals at autopsy. Examination of petechial smears was not done in the present case, the only evidence of the meningococcal origin of the disease being the positive complement-fixation test, but it appears to be the most reliable method of finding the organism. That the disease was meningococcal cannot be doubted, however, in view of the clinical picture, the late changes in the cerebrospinal fluid and the satisfactory response to sulphapyridine.

I wish to express my thanks to Dr. Allen Daley, chief medical officer, L.C.C., for permission to publish this case, and to Dr. E. H. R. Harries, medical superintendent of the North-Eastern Hospital, for advice and assistance.

POSTVACCINAL AND MEASLES ENCEPHALOMYELITIS

REPORT ON TWO CASES WHICH RECOVERED

A. H. G. BURTON, M.D. LOND., M.R.C.P., D.P.H., D.P.M.
MEDICAL OFFICER OF HEALTH FOR ILFORD

J. H. WEIR, M.D., B.HY. DURH., D.P.H.
DEPUTY MEDICAL OFFICER OF HEALTH

THE Ministry of Health reports for 1932–38 inclusive reveal only 6 cases (5 fatal) of postvaccinal encephalitis in infants under one year during this period in which Government lymph for 1,370,490 primary vaccinations was issued; 2 additional cases were notified during 1939. Encephalomyelitis is also a rare complication of measles, and Boenheim,[2] reviewing 5940 cases of measles, found nervous complications in only 0·4% of which less than a third were cases of encephalitis.

In the 125 reported cases of measles encephalomyelitis reviewed by Ford [3] the fatality was about 10%, and 65% of the survivors manifested residual symptoms; 8 of the cases occurred in one outbreak of measles in which some 55,000 people were affected. In the 1936 measles epidemic 8 cases of encephalomyelitis were under observation in the London infectious diseases hospitals, and 3 proved fatal. In view of the rarity of these conditions the following case-records may prove of interest.

CASE 1

Boy, only child, aged 6 months. Breast-fed for two months and subsequently bottle-fed on a well-known proprietary brand of dried milk with the addition of halibut-liver oil and orange juice. No previous severe illness, accident or operation. No recent or existing illness in household; brief association with contact of a case of influenza on Feb. 22. Convulsions when one day old but none since. Always pale and had of late been having iron tonic after feeds. Primarily vaccinated by single insertion on left arm on Feb. 14, 1940, full aseptic precautions being observed; 5 other children similarly primarily vaccinated about this time with same batch of lymph. Of these vaccinations, 4 were successful and none developed any signs or symptoms of disease of central nervous system in month subsequent to vaccination, during which were kept under close surveillance. Patient's parents had both been successfully vaccinated in infancy and mother successfully revaccinated in 1930.

Five days after vaccination patient's arm became normally inflamed with slight constitutional upset and continuous crying. On Feb. 21 high temperature and profuse perspiration. Next day squint noticed; disinclined to take bottle feeds though did not vomit. On 23rd profuse salivation developed, with right-sided spasmodic torticollis and elevation of right arm with flexion of forearm. Other limbs extremely limp; occasional spasms of jactitation of lower extremities. Later in day "clasp-knife" rigidity with spastic contraction of all muscle groups appeared. Child became very drowsy, apathetic and unresponsive, and uttered no sound. All these signs and symptoms became more pronounced within succeeding 24 hours and on evening of 24th child was admitted to Ilford Borough Isolation Hospital.

On admission temperature 99° F., pulse-rate 104. Respirations 26, varying considerably in depth and accompanied by occasional intermissions and deep sighing. General physique and nutrition good. Weight 14 lb. Lay on side with head retracted and slight opisthotonus. Waxy pale and completely comatose, with no reaction to handling. No abnormality detected in ears, throat, nose, lungs, heart, abdomen or urine, no rash and no signs of rickets or teething. Fontanelle tension slightly increased. Vaccination lesion looked normal and unbroken; surrounded by inflammatory zone ¼ in. wide; typical underlying deep induration. Sucking reflex weakly present but swallowing reflex had disappeared. Eyelids on both sides held tightly closed. Both eyeballs rotated downwards and left deviated inwards. Both pupils small, reacted to light, left slightly larger than right. No response to conjunctival or corneal stimulation. Owing to general spasticity tendon reflexes could not be obtained; abdominal reflexes absent, tâche cerebrale well-marked, and plantar reflexes both extensor. Kernig's sign positive. Priapism present.

Lumbar puncture gave clear fluid under low pressure with no excess of polymorphs or lymphocytes. Cells present included epithelial, a few endothelial, and a few red blood corpuscles. No organisms seen in direct smear; culture, sterile; no tubercle bacilli. Protein content 100 mg. per 100 c.cm. Sugar normal.

Some days later when the eschar separated from vaccination site area was swabbed and revealed a few degenerated polymorphs; hæmolytic *Staphylococcus albus* isolated on culture.

Treatment.—On Feb. 24 20 c.cm. of citrated blood from father given intramuscularly followed later by 20 c.cm. of citrated blood from a nurse vaccinated two months previously. Sulphapyridine soluble 0·75 c.cm. given intramuscularly every four hours for 6 doses, after which sulphapyridine 0·25 g. given four-hourly by mouth. On each of succeeding three days 20 c.cm. of citrated blood from the recently vaccinated nurse repeated and on evening of Feb. 27 sulphapyridine discontinued.

Progress.—On day after admission slight improvement; able to take small bottle feeds. On the 26th further improvement; temperature fell to normal, pulse-rate remaining at 124. Now able to take feeds normally and salivation had ceased. Colour paler and slightly cyanosed but coma now changing to stupor; when disturbed child made slight muscular efforts to resist and ineffectual efforts to cry. Only once produced any sound. Eyelids now held slightly open. No recognition of light or surroundings. Muscular contraction and rigidity and former signs remained unaltered, except for slight diminution in nuchal rigidity. On the 27th colour better; temperature and pulse now normal and thereafter remained so. Taking full feeds with avidity, crying frequently and evidently resenting being handled. Appeared to respond to sounds and some appreciation of bright light held close to eyes. Eyelids slightly more open and once eyes were fully opened voluntarily. Transient weakness of right facial muscles. Squint now intermittent. Muscular spasticity unchanged. Some blurring of outlines of right optic disc; left disc normal.

During succeeding week generalised rigidity slowly diminished, passive limb movements were more easily accomplished, cervical rigidity, opisthotonus, torticollis and priapism disappeared and active limb movements were attempted to limited degree. Ocular signs vanished and knee and ankle reflexes gradually returned, right being stronger than left. By March 14 the child was trying to lift head off pillow and sit up. Recovery subsequently continued uninterruptedly and by April 10, when discharged, no sign of spasticity and all reflexes normal. Had gained 21 lb. 5 oz. since admission on Feb. 24.

Three weeks after discharge was examined at Royal National Orthopædic Hospital by Mr. R. Y. Paton, who reported no signs of residual paralysis and all muscles gave normal electrical reactions.

CASE 2

Girl, aged 6 years. No previous severe illness, accident or operation. On March 1, 1941, developed cough and 14 days later rash of measles appeared. Disease pursued normal course until March 19 when aphonia developed and vacant facial expression was noticed. Remained fully conscious and able to express herself and indicate needs by gesture. Subsequently unable to speak despite strenuous efforts to do so. On March 22 was allowed to get up but could not stand without support or perform coördinated movements with hands and arms, which had become limp and tremulous. Saliva dribbled from mouth and stiffness and hyperæsthesia of legs were

1. McLean, S. and Caffey, J. *Amer. J. Dis. Child.* 1931, **42**, 1053.
2. Boenheim, F. *Ergebn. inn. Med. Kinderheilk.* 1925, **28**, 598.
3. Ford, F. R. *Bull. Johns Hopk. Hosp.* 1928, **43**, 140.

noted. During next few days hands and arms increasingly rigid. Frequent attacks of crying on March 28. On 29th developed intense pain in legs and periodic screaming attacks between which lay stuporose.

Admitted to hospital on night of March 31 in stupor. Colour poor. Lay on side with slight opisthotonus. Temperature 99·4° F., pulse-rate 84. When examination was attempted became extremely violent and resistant, screaming with a husky voice of metallic timbre. Apart from slight congestion of fauces, physical signs limited to central nervous system. Pupils reacted to light and accommodation. Well-marked tremor of limbs with some rigidity; stiffness of spinal and neck muscles with slight opisthotonus. Kernig's sign weakly present on both sides; reflexes all somewhat exaggerated, with bilateral ankle-clonus. Lumbar puncture gave bloodstained fluid under normal pressure and on this and two subsequent occasions, 3 and 7 days later, examination report normal except for blood-cells accounted for by difficulty of controlling child during operation. During night of admission, erythematous rash appeared on arms and legs, with petechial spots on knees. By next morning temperature and pulse normal and remained so thereafter, but child excessively restless and violently resistant, with frequent attacks of screaming; required constant supervision and restraint to prevent her throwing herself out of bed. Head retraction, opisthotonus and limb tremor more definite. Later in day developed repetitive cycle: after throwing herself about and screaming for three minutes, during which arm and hand tremors, head retraction and opisthotonus were accentuated, had an interval of two to three minutes when lay quietly supine with outspread legs and arms, eyes and mouth wide open.

Treatment.—On admission put on fluid diet and given sulphapyridine 0·5 g. four-hourly by mouth, later augmented by sulphapyridine soluble 3 c.cm. intramuscularly. On April 2, 12 c.cm. citrated whole blood given intramuscularly and on 3rd, 4th and 5th 20, 20 and 10 c.cm. of measles convalescent serum given. Restlessness controlled by large doses of syrup of chloral and bromide.

Progress.—Slight improvement on April 4, when limb rigidity and tremors were less, opisthotonus and nuchal rigidity diminished and irritability not so extreme. Now appeared to be conscious and would follow moving object with eyes. Periodic attacks of screaming still occurred and still resentful of handling. Improvement was maintained and speech, at first limited to whispering with unnatural lisp, regained on April 6. Cerebration at first slow and irrational but improvement comparatively rapid and recovery uninterrupted and uneventful. Discharged on April 20. When re-examined on May 7 no signs of disease of central nervous system or evidence of mental impairment elicited. According to parents only abnormality was slight tendency to fidget, but speech clearer and more distinct than before illness.

DISCUSSION

While the use of blood or serum from recently vaccinated persons or measles convalescents is a well-recognised method of treatment in such cases, few examples of the successful administration of sulphanilamide or sulphapyridine are recorded. Although the value of sulphapyridine in virus infections generally is doubtful, it was felt that since it has been of benefit in certain diseases of virus origin, it should be employed in an attempt to augment the effect of serotherapy. It is interesting to note that Miller and Wray [4] have recently applied this principle to the treatment of poliomyelitis.

Since the fatality-rates in these cases vary considerably in different age-groups and in different recorded series, and spontaneous recovery does occur, it cannot be claimed that the favourable therapeutic response was achieved by the agents employed acting either singly or in combination. Nevertheless, in view of the extremely grave condition of the children, the first of whom was in an age-group for which the fatality is high, the extensive involvement of the central nervous system and the rapid progression of the disease process without any evidence of amelioration until treatment was instituted, some encouragement is given for the future employment of the method.

SUMMARY

A boy aged 6 months, with postvaccinal encephalitis, was treated with sulphapyridine plus intramuscular injection of blood from his father and from a recently vaccinated nurse.

A girl aged 6 years, with encephalitis following measles, was treated with sulphapyridine plus intramuscular whole blood and convalescent measles serum.

Both recovered completely.

4. Miller, S. and Wray, S. *Lancet*, 1941, **1**, 753.

ENCEPHALITIS OF UNKNOWN ORIGIN

H. A. PALMER, M.D. MANC., M.R.C.P., D.P.M.
MAJOR, R.A.M.C.; LATE SENIOR ASSISTANT PHYSICIAN, WOODSIDE HOSPITAL

A SOLDIER, aged 19, belonged to a unit in which three other men developed typical zoster. The first reported sick on Nov. 30, 1940, the second on Dec. 20, 1940, and the third early in the New Year 1941. The patient enlisted on Dec. 19, 1940, received his first antitetanic injection on the 21st, his first T.A.B. injection on the 23rd and his second T.A.B. injection on Jan. 3. Twelve days later he felt ill, complained of nausea and headache, vomited once or twice and suffered from diarrhœa. On Jan. 17 he felt shivery and chilly, reported sick and was put to bed; his temperature was 103° F. Next day he had slight head-retraction and his headache was worse; a few herpetic lesions were noted and diagnosed as herpes labialis. On Jan. 19 he complained of slight breathlessness and his general condition aroused the suspicion that he might be developing pneumonia. He was therefore given 6 g. of sulphapyridine in 48 hours, and arrangements were made for his admission to hospital. There, no evidence of pneumonia could be found, but he had a little sputum which was sometimes blood-streaked. (He had had a slight cough with sputum for the previous month, and a sister had died of phthisis.) He was once more put on sulphapyridine as a precaution, receiving a further 7 g. in the next three days. On Jan. 21 he had a sudden transient impulsive outburst recorded as a "hysterical attack." Next day he was confused and restless, and was transferred to a military hospital.

On admission he was in a restless, delirious, very confused, out of touch with his surroundings, and resistant to all nursing and medical attention. There was slight neck-rigidity and a positive Kernig's sign; the optic discs showed a little haziness of the nasal margins; the cerebrospinal fluid was under moderate pressure and contained 7 lymphocytes per c.mm. Blood-count showed 18,000 leucocytes per c.mm. There was a fading crop of herpetic vesicles on the left side of his cheek. A further 7 g. of sulphapyridine was given between Jan. 25 and 28. He became more restless, requiring sedatives, and two areas of purpuric staining appeared over his right shoulder and sacrum. On the 27th he had a Jacksonian seizure, after which his condition changed to a quiet coma. On the 28th he had two further convulsions, and both plantar responses were extensor. He died on the 29th.

Autopsy.—No abnormality in dural or accessory sinuses. Membranes were rather pink and congested, and in left temporo-parietal region were adherent and manifestly inflamed over an area 2 in. square; apart from this they appeared somewhat bulky and œdematous. Cut surfaces of brain slightly pink; five areas of colliquative hæmorrhagic necrosis, two in one hemisphere and three in the other. These ranged from ½ to 2 in. across and were filled with a thin, purple liquid. Lieut. I. B. Gartside, R.A.M.C., reported on the sections as follows, and Prof. M. J. Stewart has kindly confirmed his findings.

"Several blocks of the brain tissue have been examined. Nowhere is there any suggestion of perivascular cuffing or of any other focal accumulation of inflammatory cells. There is some generalised œdema of the brain tissue, but this is not well marked. In all the blocks examined there is much focal and streaky hæmorrhage scattered throughout the tissue, in addition to the gross hæmorrhage seen by the naked eye. One large block, which shows relatively little change in the brain substance, shows a striking feature in the meningeal veins and vesicles lying in the sulcus which runs through the section, and in the capillary and venular channels in the substance of the brain itself. These are all distended with thrombus in which polymorphonuclear leucocytes are present in large numbers. (It will be remembered that there was a leucocytosis of 18,000.) This block also shows the same abundance of focal and streaky hæmorrhages, with some necrotic changes in the brain tissue in relation to these hæmorrhages, which is seen in all the blocks examined. A

portion of the membranes which was adherent shows considerable engorgement with a good deal of interstitial hæmorrhage but little else of note. The chief pathological features are: the considerable focal and streaky hæmorrhage in addition to the five areas of gross hæmorrhage; the stuffing of vessels with thrombus in which the polymorphonuclear leucocytes are present in great numbers; and the entire absence of any focal accumulations of inflammatory cells or any perivascular cuffing."

DISCUSSION

The main points to be considered in this case appear to be: (1) that clinically he behaved as an encephalitis; (2) that herpes zoster was present in the unit; (3) that A.T.T. and T.A.B. were given more or less simultaneously just before the onset of the lesion; (4) the equivocal clinical observation of herpes on the lips accompanying the febrile onset of the illness; (5) that he had received sulphapyridine; and (6) the histopathological findings of a brain in which a toxic rather than an inflammatory reaction were the main features.

Russell Brain [1] has carefully reviewed the literature on zoster encephalitis, and although it is tempting to include this as such a case the autopsy findings are dissimilar and a physician who saw the patient at the time was satisfied that the herpes was herpes labialis. Nevertheless when seen in this hospital the fading vesicles extended well on to the cheek and angle of the jaw and were judged to be zoster. The administration of A.T.T. and T.A.B. simultaneously is known to be provocative of intense reactions and the onset of this case twelve days later shows a suspicious analogy to known cases of postvaccinal encephalitis as regards the latent period.

The actual type of response to virus infection seems to be of two varieties, according to Adler,[2] who has reviewed 100 consecutive cases diagnosed as acute encephalitis out of a total intake of 368,000 patients at the Boston City Hospital from 1929 to 1938. Only 70 of these satisfied her criteria for inclusion as unequivocally proven cases and in only 19 was an autopsy performed. The pathological findings demonstrated two clear entities—a toxic and a focal variety. The toxic variety was characterised by signs of diffuse cerebral involvement with a normal cerebrospinal fluid and perivascular hæmorrhages, but without focal leucocytic infiltration or demyelination. In the focal variety there were clinical signs of localised neurological lesions, with an abnormal spinal fluid and focal cellular infiltration and occasionally demyelination. The case here described seems to belong to the group of toxic encephalitis, and in an analysis of Adler's case material both types occur as postinfectious phenomena. These are her figures.

	Cases	Deaths
Postinfectious groups (following mumps, rubella, &c.)	30	13
Following exogenic poisons (alcohol, lead, &c.)	8	1
Infectious encephalitis (mastoiditis, typhus, &c.)	11	7
Acute lethargic	4	1
Other cases	17	5

The possibility that sulphapyridine may itself produce cerebral symptoms has been raised by Johnstone and Forgacs,[3] who observed that in some cases of cerebrospinal fever signs of cerebral irritation persisted or increased after the cerebrospinal fluid had become normal. Unfortunately no autopsy was done on their two fatal cases. In the present case there could be no question of overdosage, but according to Johnstone and Forgacs cerebral irritation may arise from moderate dosage of sulphapyridine. It seems, then, that this possibility cannot entirely be excluded here. Similarly it is not possible to exclude a toxic encephalitis, secondary to a mild pneumonia, though the autopsy gave no support to the clinical findings of pneumonia.

SUMMARY

A fatal case of toxic encephalitis is described in a man of 19. The lesion may have been secondary to a mild pneumonia, to zoster, to the injection of antitetanic serum and T.A.B. vaccine, or to sulphapyridine therapy.

1. Brain, W. R. *Brit. med. J.* 1931, **1**, 81; Schiff, C. I. and Brain, *Lancet*, 1930, **2**, 70.
2. Adler, A. *Arch. Neurol. Psychiat.* 1940, **44**, 541.
3. Johnstone, D. F. and Forgacs, P. *Brit. med. J.* 1941, **1**, 772.

Medical Societies

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the Section of Medicine on Oct. 10, with Dr. A. R. PARSONS in the chair, an address on

Water Deficiency

was read by Dr. R. H. MICKS, the president of the section. He did not include the dehydration of surgical shock (without fluid loss) or the dehydration caused by extensive burns, for so much knowledge of these two subjects is now being acquired that it is too early to lay down systematic teaching. But it is important to try to arrive at a systematic teaching about dehydration due to diminished water intake or abnormal water-loss. The phenomena of water deficiency may, he said, be divided into three stages—first, those of the falling water-reserve, symptomless except for the loss of about a twentieth of the body-weight; second, those of dehydration without circulatory collapse, the symptoms of which are a dry tongue, loss of elasticity of the skin, hæmoconcentration, and beginning impairment of renal function; third, dehydration plus circulatory collapse. The aim must be to recognise the first stage, because the proper treatment of dehydration is to anticipate its onset, as can easily be done by careful measurement of the water balance, or, in the infant, frequent weighing. When dehydration is due to excessive loss of body fluids sodium chloride is as much needed as water. In dehydration plus circulatory collapse the intravenous route should be used, and at times hypertonic saline is required. In general the solution administered should be normal saline, but there is evidence that for rapid rectal absorption 0·12% saline is better. Glucose solutions are not necessary except when parenteral feeding has to be maintained for a long time, and sometimes in diabetic coma. There is little reason to think that either special alkalinising fluids or fluids containing calcium or potassium salts are useful, except possibly in certain rare cases. The intravenous route is really one only required in emergencies. In many cases fluid can be administered by mouth or nasal tube. Rectal drip is satisfactory in many cases and enough fluid can be given by that route to maintain life and compensate for a considerable abnormal loss. Intramuscular administration has been used successfully in some large clinics. Subcutaneous administration of large volumes of fluid is now but little practised, and Dr. Micks asked for the experiences of those who had used it. Intraperitoneal administration is, he thought, usually unsatisfactory because little fluid can be given.

Prof. W. R. FEARON wondered whether people drink enough water, and whether doctors are giving enough of it to their patients. Water deficiency is usually a question of salt deficiency and salt balance. If the cell membrane is complete the ions do not tend to escape readily from the cell. There is no mechanism equivalent to that of thirst to tell one when there is too much water in the body. If one knows the osmotic pressure of the urine one can draw the osmotic curve from hour to hour. This will show the state of water balance at any time. The treatment of dehydration is physiologically the administration of saline. Far more harm is likely to be done by giving too little water than too much.

Prof. W. J. E. JESSOP referred to the relationship of water to treatment with the sulphonamides. Water restriction in such cases is dangerous on account of the formation of drug crystals in the kidney.

Mr. SETON PRINGLE, president of the academy, said that surgeons recognised earlier than physicians the possibility of severe and perhaps fatal dehydration. In every major operation Arbuthnot Lane used to insert a needle under each breast and give two or three pints of saline. This was a great help in the first and second stage of dehydration, though it was quite useless in the third stage. Mr. Pringle had found saline without glucose satisfactory. Rectal drip has been the routine method for many years, but in many patients it proves uncomfortable and inconvenient. If serious dehydration is feared this method is tedious. A reservoir of saline is now used instead of the drip. This is connected with the

rectum through a very wide tube and the saline is only taken up from the bag as it is needed, so that the rectum never becomes distended or uncomfortable.

Dr. GEOFFREY BEWLEY referred to the giving of nasal fluid to unconscious patients and said that in these cases it is frequently a case of giving food as well as fluid. The patients are given eggs and sugar by this route. Life can be preserved for months by giving fluid through the nose.

Prof. T. W. T. DILLON said that one of the most important things is to have some easy test by which to know when enough water has been given and the water depots are full. If the specific gravity of the urine is taken in these cases it will be observed that water repletion coincides with a sharp fall in the specific gravity.

Dr. R. E. STEEN said that there were certainly definite indications for the intravenous drip method in young children.

Mr. J. C. FLOOD said that until two years ago there was a tendency to give too much water. Patients were given transfusions of water under every condition of surgical collapse. It was then considered that this was being overdone. Of the importance of water in the right class of case there can be no doubt. It is necessary to distinguish between dehydration due to water going out of the body and that due to water coming out of the blood channels. There is a considerable chance of the patient being overdosed with water if he is suffering from straightforward shock associated with a water shift out of the blood-vessels into the tissues. There is no entirely satisfactory and reliable therapeutic test to show when enough water has been given. When a patient is receiving postoperative transfusions and salines a record must be kept of the total fluid intake and excretion every day.

Dr. A. W. SPAIN thought the intravenous route unsuitable for a doctor faced with an emergency away from a hospital. In such cases the subcutaneous route is very efficient. It is astonishing how rapidly a patient will absorb fluid if a pint is put under each breast. This can be done without causing the patient any inconvenience.

Reviews of Books

Surgery of the Heart

E. S. J. KING, M.S. Melb., D.Sc., F.R.C.S., F.R.A.C.S., major A.A.M.C.; honorary surgeon to out-patients, Royal Melbourne Hospital. London: Edward Arnold. Pp. 728. 50*s*.

VERSATILITY and thoroughness do not always go hand in hand, but here is an exception. During the past twenty years Major King's interests have ranged over surgery and pathology, from teeth in dermoid cysts to successful thoracic œsophagectomy for carcinoma; and now he succeeds in concentrating a vast and admirably documented quantity of information that bears on every phase and aspect of cardiac surgery. The book begins as it should with a clear, brief account of the heart's development, abnormalities, anatomy, physiology and pathology. Two welcome chapters explain orthodiagraphy, kymography, tomography, and finally, electrocardiograms, their shape and value. All the eggs—those war-time symbols of what is commonplace but unfamiliar—are thus in one convenient basket. Major King goes on to deal with experimental investigations, with the special surgical problems created by disease or injury of the heart or pericardium. The broad impression left is one of swift advance—encouraging, brilliant, tentative. Time must pass before we can choose, for example, with confidence the best surgical means of treating angina pectoris and the most suitable cases for treatment. Methods include those which seek to interrupt the conduction of pain and those—more numerous—aimed at removing the cause; the second group are designed to increase the vascularity of the myocardium, either by means of grafts of muscle and omentum, or else by opening up the rather grudging inosculation of cardiac vessels. This last method links up with the well-known work by Makins on simultaneous ligature of vein and artery; Blum and Gross have found that when the coronary sinus has been occluded, they can then, with the heart congested, tie a coronary artery at a point where ligation would otherwise cause death.

In discussing quasi-separate blood-supplies to the half-dozen layers of ventricular muscle the author argues that the fibrosis caused by infarction of one or other of these layers is likely to offer a barrier through which new vessels brought by a graft might be unable to grow. The fibrosed layer itself is often past salvation; and even if new vessels do penetrate compromised heart muscle, can we be sure that in *the living subject* there will be a flow through them towards the heart and not away from it? On these and many other points he brings his own investigations to bear. He suggests that too little attention is paid to the effect of merely opening the pericardium; for pain in some of his cases has been relieved before new vessels could possibly grow into the heart. Such relief is linked perhaps with the achievement of O'Shaughnessy and McCunn who managed to improve exercise tolerance in racing greyhounds by liberating their large hearts from pericardial restraint.

Satisfying indications for treating pulmonary emboli by operation are not yet even in sight; the surgeon must still wait till the red warning gives way to the green signal of death. And while it is certain that recuperable cases are being lost through an almost pandemic blight of unprepared defeatism, it is likely, too, that operation is often a superfluous coup-de-grâce. We shall be in much better position to judge of this and other cardiovascular procedures when we possess many more accounts of failures; Nyström wants careful records of them all. In the meantime we can study how to simplify, or even extend, the scope of intervention by removing clot with aspiration instead of forceps. Major King gives too little detail of operation for these emboli; he does not mention the screen of thick fat often found in front of the pericardium, a screen which may well confuse tyros, who are told to expect "a white and shining membrane" as soon as "the pleura is swept laterally." And "sweep," too, must be carefully qualified; the act needs no dash and plenty of method.

Cardiac-valve surgery is for the moment at a standstill in clinical practice; operation has only achieved success in 3 cases with mitral stenosis—Tuffier's in 1914, Cutler's in 1923, and Souttar's in 1925. In the first and last dilatation was made with a finger, while a tenotome was used in the other; and who knows how much of the improvement was due to the mere opening of pericardium? It would be improper to criticise a comprehensive, disciplined work on the score that the fascination of the subject is kept in abeyance, but we cannot help wishing the author had followed the practice of old writers and given us more loving detail (should one say the lowdown?), for example, on the toothpick found in the heart. Meanwhile he has produced for those concerned a quite indispensable book.

What Price Alcohol?

ROBERT S. CARROLL, M.D., medical director, Highland Hospital, Asheville, North Carolina. London: Macmillan and Co. Pp. 362. 12*s*. 6*d*.

Dr. Carroll certainly knows his alcoholists from infancy upwards and illuminates their progress through life by many a tell-tale case history. He appears however to indict alcohol for all degenerative trends in modern American civilisation, rather than to regard alcoholism as but one symptom of the neurotic's failure to face up to life's demands.

An interesting thesis, developed at length throughout the book, is that faulty diet is the fundamental defect in the average alcoholist. In the author's opinion the frequent restless gobbling down of everything from hot-dog to chocolate induces a "vitality-deficiency" and a "food-crave" which develop into a demand for the quicker satisfaction afforded by alcohol. He advances a "blood-brain-barrier theory," according to which the function of the choroid plexus is to filter off from the blood deleterious substances which would injure neurones and synapses if allowed to reach them. Products of hyperalimentation alter the permeability of the barrier and thus are indirectly responsible for dysfunction of the higher cerebral centres. Brain tracts of poor quality will be disorganised more easily than those of robuster heritage by barrier-passing toxins. Hence the distinction between those who can and those who cannot carry their liquor. On treatment Dr. Carroll's general advice is eminently sound: he keeps insistently before the patient the maxim: "You have come here to be taught to live without alcohol in any form at any time." He shows clearly that the attainment of this freedom involves nothing less than re-education of the addict personality.

VITAMIN THERAPY

The New Vitamin Tests on Children

On the authority of a B.B.C. announcement, and a paragraph in the newspapers, we have the interesting information that 500 London elementary schoolchildren, between the ages of 7 and 14, are shortly to take part in experiments to test the effect on their general health of an increased vitamin intake.

The Ministry of Health and the Board of Education have requested the London County Council to conduct the experiments. Their outcome will therefore be of interest to the medical profession far beyond the boundaries of Greater London.

A PREVIOUS EXPERIMENT RECALLED

By the nature of the tests some time must necessarily elapse before the publication of findings. In the meantime, therefore, memory may be refreshed on an earlier series of vitamin tests on children carried out before this war. The Medical Officer of a large Children's Convalescent Home in the Southern Counties, a pioneer in vitamin therapy, was anxious to ascertain at first hand the effect of adding vitamins to children's diet. For his medium he chose Bemax which conformed to what he considered to be three important requirements, viz. :—

(*a*) That it was a natural product.

(*b*) That it was easily obtainable.

(*c*) That it was comparatively inexpensive.

Suitable quantities were added to the children's ordinary diet; careful records were kept of day-to-day progress of the experiment. Results, even in the necessarily brief form reprinted here, are illuminating.

RECORD OF WEIGHTS

Name	Age Years	Weight gained	Period of Time
		st. lbs.	
Dorothy W.	10	10½	6 weeks
Gladys E.	13	1 4	3 months
Edna O.	13	6	2 weeks
Winifred S.	13	1 4	7 weeks
Joan M.	10	9	6 weeks
Thomas C.	8	6	6 weeks
Lily T.	13	13½	6 weeks
Hilda A.	8	13½	7 months
Kenneth G.	7	8½	6 weeks
Lydia L.	12	1 ½	7 months
Beryl J.	13	1 1	10 months

THE EFFECT OF WAR CONDITIONS

Whether war conditions of rationing, restriction of diet in certain valuable foods, etc., present a more promising background for vitamin tests than existed at the time of the previous investigation may well be a matter for argument. What seems clear enough is that the need for additional vitamins in the daily diet, which we knew to exist even before the war, is hardly less urgent in present circumstances. The addition, in particular, of vitamin B, in the natural proportions represented by Bemax, is beneficial in quite a wide, general sense. This fact is very well expressed by the Medical Officer already referred to who concluded his report on the investigation in these words, "the general improvement in health and stamina was in many cases remarkable, absence of the usual colds and other winter ailments being an especially notable result of the treatment."

THE MULTIPLE FACTORS OF BEMAX

These results were largely attributable to the vitamin content of Bemax by reason of the very high unitage (320-420 international units per ounce) of vitamin B_1 and the presence of the other B vitamins. But medical men studying the analysis printed here may well perceive the influence of other factors which, working together, would account for the results, many of which are being noticed in general practice throughout the country. In particular, the high protein and iron contents of the Bemax supplement probably produced their own beneficial results.

The Vitamins	*The Food Constituents*		*The Minerals*	
A. 280 i.u. per ounce	Protein	34.0%*	Calcium	0.058%
B_1. (aneurin) 1.2 mg. (400 i.u.) per ounce	Digestible Carbohydrate	46.5%	Phosphorus	1.11%
B_2. (riboflavin) 0.9 mg. per ounce	Fat	8.5%	Iron	0.0047%
P.P. factor (nicotinic acid) 1.1 mg. per ounce	Mineral Salts	4.5%	Copper	0.0015%
B_6. (adermin) 0.45 mg. per ounce	Water	5.0%	Magnesium	0.31%
E. (a-tocopherol) 7-10 mg. per ounce	Cellulose (fibre)	1.5%*	Sodium and Potassium	0.64%
			Chlorine	0.017%

**Note the exceptionally high protein and low fibre content.*

Descriptive literature and clinical sample of Bemax sent to medical men on application. Vitamins Limited (Dept. L.U.), 23, Upper Mall, London, W.6.

Signs of the times

An increasing tendency towards skin ailments arises from the present-day conditions of public crowding.

STREPTOCIDE OINTMENT

THIS preparation contains, in solution, 5 per cent. Streptocide (Sulphanilamide Evans). It is non-toxic and can be employed over extensive areas. Streptocide Ointment was clinically tested prior to release for general sale. Medical Practitioners, Public Health Depts. and Hospitals in the principal countries of the world have since testified to its value in the treatment of numerous troublesome skin conditions. The wide application of Streptocide Ointment is indicated by reports received of its use in the stated conditions.

STREPTOCIDE CREAM

Streptocide is also issued in the form of a non-greasy cream, which is specially recommended in acute inflammatory conditions when rapid absorption of the drug is desired.

- CELLULITIS
- CHRONIC ULCERATION
- CYTOLYSIS
- ECZEMA
- EMPYEMATEOUS SINUS
- ERYSIPELAS
- IMPETIGO
- INFECTED WOUNDS
- POST-SCARLATINAL RASHES
- VARICOSE ULCERS
- WHITLOW

PRICES AND PACKAGES

OINTMENT	CREAM
Containers of 2 oz. - 2/6d.	Containers of 2 oz. - 2/9d.
Containers of 1 lb. - 14/6d.	Containers of 13 oz. - 14/6d.

Prices apply to Gt. Britain and N. Ireland, are subject to the usual discounts.

Samples and literature will be sent on application to Home Medical Dept., Royal Liver Building, Liverpool, 3.

PRODUCTS OF

MEDICAL RESEARCH EVANS

Carried out at The Evans Biological Institute by

EVANS SONS LESCHER AND WEBB LTD · LIVERPOOL AND LONDON

M.12

THE LANCET
LONDON: SATURDAY, NOVEMBER 8, 1941

THE WARD DRESSING

INFECTED war-wounds may be divided into two broad categories: first, wounds infected outside the hospital ward, and these are for the most part infections with the anaerobic sporing bacilli, *Clostridium tetani* and the gas-gangrene group; secondly, wounds infected inside the hospital ward where the principal pathogens are the pyogenic bacteria—staphylococcus and streptococcus and the coliform bacilli including proteus and pyocyaneus. These pyogenic organisms are found in only a small proportion of open wounds examined on admission to hospital—the figures have been 5–6% in the present war and 15–20% in the last—but after a week's stay in hospital the proportion of infected wounds may exceed 50% and increases with further residence to 70–90%. *Streptococcus pyogenes* is the most dangerous of the pyogens because of its great invasiveness, but the coagulase-positive staphylococcus, which in the past year has been the most frequent pathogen found in war-wounds, may also produce much chronic invalidity if it gets access to bone. It is true—and perhaps unfortunate—that infection produces little evidence of local or systemic upset in many wounds, particularly if they are shallow and draining well, and does not greatly retard healing, so that a complacent surgeon may regard such infection as innocuous. But once in a while an unfortunate "accident" occurs—a new patient develops cellulitis or septicæmia, signs of osteomyelitis appear in a case of compound fracture, nurses go off duty with septic fingers and sore throats, and the surgeon realises too late that infection is rampant in the ward.

It was to the problem of preventing these tragic consequences of wound-infection that certain teams of surgeons and bacteriologists in Hertfordshire addressed themselves during the past winter, and a direct result of their researches is an excellent memorandum,[1] published jointly by the War Wounds Committee of the M.R.C. and the Committee of Sector Pathologists with Dr. E. T. C. SPOONER as editor. In it the problem of hospital infection of wounds is clearly set forth and practical instructions are given for its prevention. If it be granted (and the circumstantial evidence is very strong) that pyogenic infection of open wounds takes place mostly in the hospital ward, the possible sources must be defined and controlled and the channels of spread blocked. The principal sources are wounds already infected, the air-passages of patients and ward personnel, and the dust of the ward which has become infected from the first two sources. The channels of spread are direct transference by hands, instruments and dressings which become bacterial carriers from contact with already infected wounds or respiratory tracts, droplet infection from the nose or mouth of attendant or patient (5–10% of adults are throat carriers of *Strep. pyogenes*; 30–40% are nasal carriers of *Staphylococcus aureus*), and air-currents carrying infected dust or droplet-nuclei. Obviously if the proportion of infected wounds increases, dust and air become more heavily infected, sore throats appear and a vicious circle sets in. In the infection of wounds, it seems probable, though the point has not been proven, that direct transference by infected hands or instruments is more important than droplet or aerial infection. The latter two channels can be largely blocked by efficient masking of all ward personnel plus the maintenance of silence among the patients and a still atmosphere during the period of the dressings. Bed-making, sweeping and dusting must be completed at least an hour before dressings are begun, windows and doors should be kept closed to minimise air-currents, floors may be treated with spindle-oil to adsorb the dust, and any movement of bedclothes must be done gently and slowly.

For the control of contact infection, a technique which for many will mean a radical revision in ward wound-dressing is recommended and described in detail in the memo. The key-points in this ritual are that the hands of the dresser are to be regarded as at all times infected, while the wound and the surrounding skin are to be likened to a plate of culture medium—that is, a surface very susceptible to infection and therefore to be uncovered for the shortest possible time, and, the memo might have added, as infrequently as possible. Gone are the days when wounds are gaily laid bare for the round of inspection by the big white chief and his retinue of maskless followers. Instead there is to be a dressing team, each member well versed in his or her own duties, and each wound must be inspected and re-dressed before the next is dealt with. The team consists of the dresser (preferably the house-surgeon), the trolley-attendant, a trained nurse who is responsible for the care and sterility of instruments, dressings, bowls and so on, and a "dirty" assistant to lend a helping hand in removing bandages or holding a limb, and to lift the lids of the bins for discarded dressings; all dressings are discarded but the bandages and outer dressings are salvaged for re-use. After the outer dressing has been removed by hand the inner dressing is changed by the dresser with long instrument forceps in hands that are washed and dried but not "scrubbed up." Every step is designed to prevent the transference of infective material from one wound to another by hands, instruments or dressings. For the sterilisation of instruments and the various receptacles—which should have lids—boiling in water in a ward-steriliser big enough to take the largest vessels is recommended; 2% soda should be added to prevent rusting, and scalpels may be so sterilised without detriment provided their blades are wrapped in lint or placed in a zinc rack. Once sterile, instruments can be kept in a dry sterile dish with a cover, or if this method is not convenient they should be immersed in liquor formaldehydi chirurgicalis [2] rather than lysol or spirit. Much practical instruction is given about the irrigation of wounds, chemical disinfectants, masks, sterilisation, and cleansing of baths, and particular attention is directed to the danger of cutting and changing plasters in the ward, for plasters usually teem with bacteria both inside and out. One of the most sensible suggestions is that nurses should have a short *practical* course in bacteriology which will bring home to them better than many abstruse lectures what infection means, a view which is borne out by Dr. JANET WELCH'S experience in Africa (see p. 574).

1. Prevention of "Hospital Infection" of Wounds. M.R.C. War Memo. No. 6. H.M. Stationery Office, 6*d*.

2. Borax 1·5, solution of formaldehyde 2·5, phenol 0·4, water to 100.

Their intelligent coöperation, essential for success in countering cross-infection in wards, can only be obtained if the rationale of new procedures is explained to them, and a simple summarised version of this memorandum might well be made available to nurses.

If the recommendations in this pamphlet seem to some surgeons rather elaborate, with a smack of the laboratory about them, let them not on that account dismiss them as impracticable or unnecessary. Infection of open wounds is a menace to be constantly guarded against, and it is illogical to use a less strict technique in dressing these susceptible wounds in the ward than is used for less vulnerable tissues in the operating-theatre. That the new technique is both practicable and effective has lately been shown by McKissock, Wright and Miles,[3] who with it reduced the incidence of hospital infection in air-raid casualties from 31·3 to 2·2% in improvised E.M.S. wards. Local sulphonamide prophylaxis and other new methods may help to minimise hospital infection of wounds but there can be no gainsaying the soundness of the principles enounced in this memo, particularly for the dressing of open wounds. It should be read and digested by every surgeon, house-surgeon, hospital bacteriologist and surgical ward sister.

ABSENT FROM WORK

A decent craftsman, seen by his doctor on a Sunday afternoon, complained that he was dead to the world; he had been working for six days a week from 8 A.M. to 9 P.M. and on Sundays from 8 A.M. to 4 P.M.; he has had two days off in the past year. Another tired out labourer hopes he will not be sent to the docks for there they work 12-hour shifts seven days a week. An A.T.S. girl, coming home on 48 hours' leave, spends the first 36 hours of it sleeping. These are three relatively trifling examples of the fatigue which must be holding up production. The Ministry of Supply might take as their slogan "Too Long Hours mean Short Output," and every works manager should have it hung over his desk.

Unfortunately when hours are reduced the output does not rise immediately; there is a relatively long period of adaptation before the workers recover from fatigue and begin to improve their standards. Naturally the lag also operates in the reverse direction, so that an increase in hours will produce a greater output for the first few weeks—until fatigue sets in. This must be so; the human body cannot be switched straight into a different gear like a machine. These two equal and opposite lags make it difficult to convince the denser and more old-fashioned works managers that shortened hours will increase production; and so the damage goes on. Many of the workers themselves recognise the fallacy in long hours and take a day off when their fatigue becomes too great. Thus there are constant complaints of absenteeism in industry at a time when absenteeism can harm us all.

But fatigue, though the most important, is not the only thing which keeps people away from work. There is always more absenteeism among women than among men, and in war-time the increase in absenteeism among women is proportionately much greater. Some of the reasons for this appeared clearly in discussion at the second session of the Women's Parliament, reported in our issue of Nov. 1 (p. 537). The greatest increase is among married women who would not normally be working in factories. These still have their ordinary work to attend to: they must still keep the home clean, buy food for their families, cook it and clear it away. It might be supposed that when both partners were out at work both would share in domestic duties in the evening; but this does not seem to be so. Etiquette among manual workers enacts that a man cannot help in the home without being looked down on by his mates. This false pride has been found to be particularly prevalent in the north country where a man may help his wife by lighting a fire, but must not lend a hand in cleaning the house or washing up—the bulk of the housework. Even if the man is out of work and the woman is supporting the family his status must be preserved, and he cannot even do the household shopping without loss of prestige. Shopping nowadays is not a task which can be performed in a few odd minutes, so women take time off from the factory to do it—they have to. Absenteeism has been considerably reduced in factories which have added household goods to their canteens so that women can do their shopping during the lunch break. Even so, time must be borrowed to clean the house, give children their meals, or look after a husband home on leave. This piling up of tiring duties renders women more liable to breakdown than men, and illness is the second most important single cause of absenteeism among women. Travel difficulties increase fatigue for both sexes, as do nights made sleepless by raids or by civil defence duties. Sometimes raid damage adds heavy and dismal salvage work to the day's toil.

Unpunctuality and slowness in starting work cause nearly as much loss of output as absenteeism and it is noteworthy that many women prefer to stay away altogether than to clock in late, feeling that they might as well hang for a sheep as a lamb. This prejudice, foolish as it is, has to be taken into account. Many women and young people are without ambition and remain untempted by the thought of promotion or more pay. Moreover in many factories the workers—men and women alike—have little sense of sharing in the war effort; the idea that the Forces are depending on their work seems remote and unreal. This attitude is often coupled with the independent Englishman's belief that his boss "knows nowt" and is making a hopeless mess of things. This view, often mistaken, springs from ignorance of the problems to be overcome: and therein lies the kernel of this matter. In industry and local government there is too little give and take of information, too few committees on which workers and officers meet to exchange views and discuss policy. The discontent often found among those serving public bodies springs largely from the fact that they are treated as pawns and never consulted as reasoning people. The same applies in industry. Workers who are told the plans of their employers—who have the background of special demands explained to them and who understand not only what their factory is out to do but also what difficulties stand in the way of success—are anxious to help. Those who are treated like children and kept in the dark behave like children. This was well illustrated in the letter from a works manager which appeared lately in our pages (*Lancet*, Oct. 18, p. 471): three men were asked to do an

3. McKissock, W., Wright, J. and Miles, A. A. *Brit. med. J.* Sept. 13, 1941, p. 375.

uncongenial job without being told the reason, so they went sick; as soon as they learned why they were needed they complied without hesitation. We are trying to get the best work out of a race of people who resent dictation; and we set about it by tiring them out and telling them nothing. We have the method, not the men and women, to blame for absenteeism.

MALARIA BROUGHT HOME

THE War Office pamphlet[1] on the treatment of malaria in people returning home from malarious areas is a timely reminder that we are likely to see many such cases during the next few years. Many people who contracted, or thought they contracted, malaria during the 1914–18 war are convinced that they still suffer from the disease. This is unlikely, for it seems that malignant tertian malaria rarely persists for more than a year or two after return from the endemic zone, although simple tertian and quartan malaria may on occasions last longer. There are exceptional cases, particularly of quartan infections, where the disease goes on giving trouble for long periods, but it is unwise to assume that any febrile disturbance in a person who has once had malaria is necessarily due to a relapse. The only way of establishing the diagnosis is by the recovery and recognition of malaria parasites; clinical examination alone is open to grave fallacy. Again, patients presenting a remarkable variety of symptoms and signs, quite unlike those of the classical malarial paroxysms, may be found to have pyrexia with parasites in the peripheral blood, and a few doses of an antimalarial drug will produce an astonishingly rapid alleviation of their trouble. When facilities do not exist for the microscopical diagnosis of the disease before treatment is begun, blood films should at least be made for later study. The so-called therapeutic diagnostic test may be gravely misleading, and should never be relied on. There is here one difficulty which constantly obtrudes itself in the study of this condition—the almost universal practice adopted by people who have lived in endemic areas of taking antimalarial drugs whenever they feel off-colour. A few doses of such drugs may well render the microscopist's task hopeless for the time being. In such cases there is little risk in stopping the drug and awaiting the reappearance of parasites in the peripheral blood before proceeding with systematic treatment. The diagnosis will then be established and treatment can at least be begun on a sound foundation.

Having established the diagnosis, the next step is to deal with the attack. The War Office pamphlet advocates the consecutive employment of three drugs: a salt of quinine by mouth in ten-grain doses thrice daily for two days; mepacrine hydrochloride (the British equivalent of Atebrin) by mouth in doses of 0·1 g. (1 tablet) thrice daily for five days; and finally, after a two-day interval, pamaquin (the British equivalent of Plasmoquine) in doses of 0·01 g. (1 tablet) thrice daily for a further five days. In this course the quinine salt is given first, since it is generally agreed that the action of quinine on the parasites, and thus on the clinical condition, is more rapid than that of any other available drug. The mepacrine sustains the therapeutic action and arrests the attack. Pamaquin, however, has little or no effect on the paroxysm but is given after this has been arrested, for when so given it is believed further to reduce the liability to subsequent relapse. This tendency to relapse is believed to be considerably greater after an attack has been treated by a single drug (either quinine or mepacrine) alone. In civil practice in this country there may be occasions when it is impracticable to follow this suggested course of treatment. One drawback is the necessity for keeping the patient in bed virtually throughout its duration—he should be confined there during and for some days after the pyrexia, and he should remain there during the exhibition of the pamaquin. Another may well be the expense and the lack of ready availability of mepacrine and pamaquin. A third is the possibility of toxic manifestations, especially liable to be caused by pamaquin. On such occasions there seems no reason why resort should not be had to the safe, cheap and universally procurable quinine preparations used in the treatment of innumerable cases in the past, and today still widely employed both here and elsewhere. It must be remembered that, particularly in the case of simple tertian and in quartan malaria, relapses do occur in many cases after a course of quinine alone, and possibly the relapse-rate is higher than that following a sequence of drugs, completed by a course of pamaquin; but this does not necessarily mean that quinine alone is not a most valuable drug. A method of treatment with quinine is suggested in the pamphlet, but another much employed consists of the oral administration of ten-grain doses of quinine sulphate in acid solution (Ac. sulph. dil. ℥xv in a tablespoon of water) thrice daily for three or four consecutive days. This will arrest almost any attack of malaria and clear the parasites from the peripheral blood of nearly every case. If this course is followed by the administration of the drug in similar doses on two consecutive days each week for a couple of months most early cases of malignant tertian malaria will not relapse. Such, unfortunately, cannot be said of simple tertian and quartan cases. Where relapses do occur in these the course can be repeated. Advantages of quinine are that it is effective in producing rapid clinical cure of the acute attacks, and that when this has been achieved the patient can continue with his ordinary vocation throughout the remainder of the course. At present many seamen on merchant and other vessels are being treated on these lines, and the period of their disability ashore is thus reduced to a few days. They can then return to sea, provided they continue to take the drug as directed. Many claim to be unable to take quinine; but in fact nearly everyone can do so, in the doses recommended, without any symptoms except temporary deafness and tinnitus.

The observations in the pamphlet on the intravenous and intramuscular injection of quinine deserve particular attention. Their routine and repeated use is rightly condemned; and due care must be exercised when using the intramuscular route to avoid periosteum and bone, large nerves and vessels, if disastrous results are not to follow. Intravenous quinine is potentially dangerous and should be given only in carefully selected cases and with extreme caution. The type of case requiring parenteral administration is the one in which the drug either cannot be taken or retained by mouth, or in which

1. Notes on the Treatment of Malaria occurring in Individuals returning from Service in Malarious Areas. H.M. Stationery Office. 1941. Pp. 6. 1d.

it is unlikely to be absorbed readily on account of the grave condition of the patient. Such cases are usually due to a malignant tertian infection, where speed in diagnosis and treatment is essential to lessen the risk of an early fatal issue.

WHEN TO TIE THE CORD

UP to a few years ago there was no difference of opinion about when the umbilical cord should be obliterated and the vascular connexion between mother and infant severed. The standard textbooks usually said "when the cord has ceased pulsating," and this was an easy rule to follow. The first element of doubt crept in as BARCROFT began to publish the results of his fascinating studies on the respiration of the fœtus and newborn baby. It seemed to be a legitimate practical deduction that once the infant's head was clear of the vulva and the respiratory tract was wiped clean of mucus in its upper reaches the sooner the cord was clamped the better, since this ensured the cutting off of oxygen which BARCROFT had shown was the most important stimulus for the first inspiration. So some obstetricians and their pædiatric associates began to urge that the cord should be clamped earlier than hitherto, the pædiatricians adding that since the infant spent the early days of life getting rid of his fœtal polycythæmia there was no harm in preventing the placental apparatus passing over the last few teaspoonfuls of blood. One pædiatrician, asserting that too much blood in the veins (hyperphlebæmia) was the cause of many troubles in infancy and childhood, urged that after the cord was cut some bleeding from the infant's end should be encouraged.

Now certain workers in Chicago are claiming that deprivation of placental blood may be a cause of iron deficiency in infants. According to E. E. WILSON, W. F. WINDLE and H. L. ALT,[1] when the umbilical cord is clamped immediately after birth, over 100 c.cm. of blood can usually be obtained from its placental end. They argue that this is equivalent to about a third of the blood-volume of the newborn infant, and that the iron liberated from the blood normally destroyed in the early days of life is stored and used for hæmoglobin formation in later infancy. If this is so the deprivation of a third of the blood-volume at birth may be a serious threat to the composition of the blood in the second half of the first year of life. Arithmetic is then brought in to suggest that deprivation of placental blood means that at 6 months of age the infant's quantum of hæmoglobin will be 9·1 g. instead of 12 g. per 100 c.cm. and at 9 months of age 9·7 g. instead of 12 g. per 100 c.cm. In order to test the validity of this theory studies were made in a series of infants aged 8–10 months. In 15 of these infants the cord had been clamped immediately after birth and in 13 clamping had been delayed "until the placenta had begun to descend into the vagina." For the former group the average blood values were: red corpuscles 5,060,000 per c.mm., hæmoglobin 10·8 g. per 100 c.cm. and mean corpuscular hæmoglobin 21·8 $\mu\mu$g. For the second group the corresponding figures were 4,450,000 per c.mm., 11·9 g. per 100 c.cm. and 27 $\mu\mu$g. It is claimed that, although the differences in the average erythrocyte counts and hæmoglobin values for the two groups are not highly significant in themselves, the difference between the mean corpuscular hæmoglobin in the two groups is statistically significant and it is considered that the infants in the "immediate clamping" group showed evidence of a mild iron-deficiency anæmia.

All the infants investigated, however, came from families of a low income group and although nearly all were receiving some carrots, spinach and other green vegetables it would not be unreasonable to suppose that additional iron, as advocated by some experts for all infants, would readily abolish the slight difference between the two groups. As regards a possible anæmia in later infancy the idea of leaving the cord until the placenta has begun to descend into the vagina cannot then be said to be strongly supported. What may be called the Barcroft point of view seems to have better claims. Further work is still needed to decide whether any change is necessary in the standard midwifery teaching of tying the cord as soon as pulsation ceases.

1. *Amer. J. Dis. Child.* 1941, **62**, 320.

Annotations

SALT WATER SURGEONS

How old is the profession of ship's doctor? Perhaps as old as the ark, if Shem, Ham and Japheth founded that precedent by which three sons distribute themselves between the church, the law and medicine. But striding down a century or two we find the calling well established in the days of Augustus Cæsar; and Surgeon-Commander R. S. Allison, at the opening of the winter session of the Royal Victoria Hospital, Belfast, suggested that St. Luke himself may have been a ship's doctor. In English ships the surgeon had a precarious status, but by the reign of Henry VIII—a monarch justly celebrated for uniting surgeons and barbers—they were doing rather well, the "chief sirurgyon" getting a salary of 13*s.* 4*d.* a month. Queen Elizabeth chose William Gilbert, one of her own physicians and president of the College, to help to stem the increase of disease in her navy; and John Woodall, first surgeon general to East India Company, followed "Generall" Lancaster in recommending lemon juice as a cure for scurvy 180 years before its use became general. Woodall also wrote a textbook for ship's surgeons which became a classic, noteworthy no less for its therapy than its piety. In the seventeenth and eighteenth centuries the status of ship's surgeons was still in the balance. They were not commissioned officers and their pay and quarters were equally poor. Many of them were keen and devoted, striving against disease in their ships' companies. Commander Allison recalled Smollett's grim account (in "Roderick Random") of his experiences, and quoted the vivid picture drawn by William Cockburn in 1697 of the ravages of typhus. He also mentioned Richard Walter, who described how severe scurvy could dissolve the callus of a well-healed fracture and leave it disunited; and Lind and Anson, who found that "the number of seamen in time of war who die of shipwreck, capture, famine, fire and sword are inconsiderable in respect of such as are destroyed by the sea diseases." Another eighteenth century sea-surgeon, Thomas Trotter, fought well for his sailors, demanding from the Lords of the Admiralty not only the fresh fruits and vegetables which would clear their fleets of scurvy but other amenities. "Give your tars," said he, "Oh my countrymen, their amusements; and while you enjoy yours on shore remember who they are that gave you security." And how strange that Dover's powder—that symbol of drowsiness and gentle perspiration—should be the nostrum of a pirate who was presumably his own ship's doctor: Thomas Dover, physician and privateer, the

rescuer of Alexander Selkirk. Then there was Robert Younge, who left a record of the battle of Camperdown in 1797, when his ship H.M.S. *Ardent* lost 41 killed and 107 wounded out of a company of 485, and he was operating for fifteen hours non-stop. Perhaps the most famous of the old naval surgeons was Sir William Beatty, who became friend and surgeon to Nelson; to him we owe an account of those closing scenes on the *Victory*, of Nelson's wounds and end. And he tells how the body was brought home to England steeped in brandy, and of the post-mortem findings. Commander Allison ended his tales of the sea with another quotation from Thomas Trotter:

"As study and diligence lead to preferment in every department of life, so in our line they have their rewards. We fulfil a most important station in the service of our country; nay of much more importance than we can expect credit for, because many of our best actions must sleep with ourselves, as medical abilities are not to be appreciated by common observers. Yet, this very circumstance is a stimulus to exertion; for it keeps alive the spirit of perseverance, from the hope that merit will at last be discerned and meet with success."

LOCAL ANÆSTHESIA IN DELIVERY

THE British mind has never accepted local infiltration anæsthesia as the method of choice in pelvic delivery. This reluctance has been explained by several arguments—that most obstetricians prefer a generally anæsthetised patient, since thereby their time is saved and any major procedure required is immediately feasible; that few institutions or chemists can be relied on properly to prepare a reliable local anæsthetic that is safe and certain in its results; that the locally anæsthetised patient requires more supervision than her unconscious sister. But the most likely explanation is that the average practitioner does not understand the local nerve-supply of this area of operation since he has never fully studied it from the point of view of infiltrating the nerve paths involved. These arguments, even if valid, are readily overcome. First, as Sheldon[1] insists, it is essential to appreciate the anatomy of the female perinæum and genitalia. The nerve-supply that must be blocked is a threefold one. The pudic nerve leaves the pelvis through the greater sacrosciatic foramen and joins the pudic vessels in Alcock's canal; it then divides into the perinæal nerve and the dorsal nerve of the clitoris. The inferior hæmorrhoidal nerve branches off the pudic trunk before its terminal division. These nerves traverse the ischiorectal fossa and supply the skin of the perinæum, labia minora, a large part of the vagina and part of the labia majora and anus. The second important nerve is the small sciatic; this emerges from the pelvis through the great sacrosciatic foramen and supplies the skin of the perinæum and back of the thigh and leg. It gives off the inferior pudendal nerve, which curves forward from below the tuberosity of the ischium to supply the skin of the labia, communicating with the superficial perinæal and inferior hæmorrhoidal branches of the pudic nerve. The third nerve that must be blocked is the ilioinguinal, which emerges from the external abdominal ring to supply the skin of the upper and inner part of the thigh and the skin of the labia. To infiltrate these nerves three points are chosen: the first over the external abdominal ring, the second just medial to the tuberosity of the ischium, and the third in the middle of the perinæal body. From these points a fan-shaped area is infiltrated spreading towards the vagina. About 10 c.cm. of 1% procaine is used for each point, amounting to 50–70 c.cm. in all. Ideally the procaine solution should be freshly prepared and sterilised by autoclaving at 5 lb. pressure for five minutes; it should be made with sterile normal saline. The addition of 10 minims of 1 in 1000 adrenaline to every 100 c.cm. of solution prolongs the anæsthetic effect and has a small but valuable local hæmostatic action. An ordinary Record syringe and a long fine needle are the only other essentials. To get the best results the timing of the injection is important. The first stage is conducted along the usual lines using Omnopon and scopolamine or gas-and-air analgesia. In a primipara the time for infiltration is when the baby's head is on the pelvic floor, but in a multipara as soon as the os is fully dilated. The period of anæsthesia to be expected varies from 1 to 2 hours, and this should suffice in all normal cases. The extent of the anæsthesia is sufficient for the performance of an episiotomy or for the application of the low forceps and the suturing of perinæal tears. There are certain practical considerations that recommend the method. The patient being conscious can be enlisted to coöperate in bearing down efforts as required. She avoids the risk of an inhalation anæsthesia, while the operator has all the muscular relaxation of the outlet such as only a deep general anæsthetic could otherwise provide, thus minimising the likelihood of forceps delivery, episiotomy and laceration. Shock and blood loss are minimal since the uterine tone is not in any way prejudiced by the atonic effects of a general anæsthetic and the chances of an atonic postpartum hæmorrhage are avoided. The benefits to the baby are self-evident; the baby is no more affected than if the delivery had been conducted without any anæsthetic at all and no respiratory depression from inhalation anæsthesia is seen, with a resulting minimum of cases of asphyxia. Sheldon has used this method in 64 cases and finds it eminently satisfactory. It fulfils the ideals of any anæsthetic to be used in obstetrics and its safety for both mother and baby recommend its wider trial.

1. *New Engl. J. Med.* March 6, 1941. p. 404.

STUDENT AND SCREEN

THE sound film "Malaria" was shown on Oct. 30 by the Ross Institute of the London School of Hygiene and Tropical Medicine. This film, made by the Shell Film Unit in collaboration with the institute, and produced by Arthur Elton and Graham Tharp, is a beautiful piece of work. The immense problem of malaria is stated, the life-history of the parasite is exposed, and finally the watcher is shown how this knowledge can be used as a rational basis for a campaign of preventive medicine on a wide scale. The photography is arresting. Different places where mosquitoes breed are shown as in a travel film; diagrams by Francis Rodker are particularly clear, and the complicated life-cycle of the parasite is demonstrated by excellent microphotographs, the work of Percy Smith and Sidney Beadle.

Such a brilliant presentment of technical material demonstrates the use which could and should be made of the cinema in medical education. Although there are now quite a number of scientific films, most have a limited audience and few are shown to students. In the days before printing, education depended on lectures and readings from rare manuscript books. Printing gave every student access to textbooks and saved him the labour of copying. Lectures continued, nevertheless, to be the basis of education, and attendance at them is still compulsory in some universities, though it would be equally logical to compel the student to read Professor X's book before being allowed to sit for an exam. As the technique of illustrating was perfected, photographs began to invade the pages of the textbooks and the student's eye could feast on static delineations of cells, tissues and organs which in life are never at rest. The cinema film, the ultra-rapid camera and the microscope can be used to convey clearly to every member of an audience the details of almost any biological process; yet academic circles in England have hardly noticed this new weapon. The sound film can combine the best, and most carefully prepared, lecture with the exact demonstration of phenomena. Colour, magnification, speeding up or slowing down, can be used to reveal inaccessible processes larger than life and twice as natural,

Even the work-shy student, with ears like the deaf adder's for the lecturer's drone and eyes revolted by the sight of type, might be stimulated by cinematic tuition. Young men and maidens have been known to cut lectures; they seldom miss the flicks.

The movie has one priceless perquisite. Time is no object: a thousand years is as a day, and a day as a thousand years, just a function of the speed of the clockwork. Fifty years ago Muybridge's slow-motion pictures taught us how we run and jump; the name of Canti stands for the quick-motion solution of the solemn process of tissue culture. The film is not just an adjuvant to the news story, it is the only way of bringing home the rhythm of life.

THE BOOKS GO ROUND

THE International Guild of Hospital Librarians is not to be put off by a mere blitz. Some hospitals have lost the better part of their libraries along with much else; others have been more fortunate. *Book Trolley* for October tells of volumes repaired, librarians appointed, patients giving a capable hand, and service steadily maintained. There are stories of resource, too—of the librarian who met the needs of two Polish airmen with seven Polish books and a dictionary, and trained a one-author man (the author was Nat Gould) to nibble at Zane Grey and then by gradual degrees to swallow most of John Buchan and a stiff dose of Cronin. This reading habit grows on us with war.

Nor are the troops forgotten. The Red Cross and St. John Hospital Library has been developing into a vigorous and widespread service since the war began. Bales of books are being sent out regularly to the depots and hospitals in the Middle East, Kenya, Iraq, Iceland, West Africa and Gibraltar, as well as the sick quarters of the Navy and R.A.F. During the summer books and magazines have been sent out at home and abroad at the rate of more than twenty thousand a month. The books which come in from donors have to be sifted, for many people anxious to be of service have sent along all manner of books, regardless of aptness for the purpose. Thus "A Treatise on Elephants" has been known to arrive cheek by jowl with "Better Bed Manners." At home war has made for useful decentralisation; book depots have been established in every county of England and Wales and in many provincial cities. They collect and distribute, sort and mend books. Voluntary librarians sometimes helped by professionals have been appointed who have been able to meet the needs of patients methodically, thanks to the experience gained in the library service during the past twenty years.

TUBERCULOSIS IN DUBLIN CHILDREN

THE tuberculosis mortality of the child population of Dublin City for the years 1930–36 was 8 per 10,000 children in the age-groups 0–15, and for 1937–39, 7 per 10,000. These figures led the Irish Pædiatric Association to make a tuberculin survey in the hospitals of the city and a report compiled by Dr. Dorothy Price has now been issued.[1] Six hospitals participated in the survey, and the tuberculin test employed throughout the investigation was the Hamburger percutaneous ointment. The association are well satisfied with this as an initial test, finding it reliable, simple and painless. A group of 1121 children were tested in the age-groups 0–14, of whom 230 reacted. The reactors at all ages were thus 20·5% of the total tested, the percentage increasing from 4·6 in the 0–1 year group to 46·1 in the 10–14 year group. Sex-incidence showed a slight preponderance of female positive reactors (4%). No less than 22 unsuspected cases of active tuberculosis were diagnosed by means of the test. The radiological findings in 116 of the children with positive reactions showed that 67 were suffering from active lesions which required treatment; 6 died. Physical examination of the lungs gave very misleading results; primary pulmonary infection could not be diagnosed by stethoscopy, and tuberculous could not be distinguished from non-tuberculous pneumonia. As a general rule a high erythrocyte-sedimentation rate was found to indicate an exudative lesion, whereas a low one pointed either to a healing lesion or to a caseous or advanced tuberculous focus with bad prognosis. An analysis of the source of infection in 38 cases, most of them under 5, showed that the father was the source of infection in 12 and the mother in 9. In attempting to correlate the housing conditions with the incidence of tuberculosis it was noted that the tuberculinisation of the childhood community appeared to be evenly distributed among all classes of dwelling, but that the slum child had much greater difficulty in healing his tuberculous lesion. The word "slum" is used in the report to indicate "one room in a tenement house, basement, or dilapidated cottage." The report tabulates a number of possible measures for meeting the situation. Excluding as impracticable the removal of a child exposed to infection under some sort of Grancher system, or the removal of the infecting adult by compulsory segregation, Dr. Price considers that the best method of prevention is early diagnosis, combined with prophylactic vaccination, increased institutional accommodation, and educational propaganda.

1. *Irish J. med. Sci.* July, 1941, p. 241.

PNEUMOCOCCAL MENINGITIS

ALTHOUGH pneumococcal meningitis is comparatively rare—only 7% of Neal's[1] 3131 collected cases of acute and chronic meningitis were pneumococcal—it was until the introduction of the sulphonamides almost invariably fatal. Perhaps more often secondary than primary, with otitis media and pneumonia the commonest primary infections, pneumococcal meningitis affects young children and elderly people more than it does other age-groups, having in this respect some resemblance to bronchopneumonia. While any one of the 30-odd pneumococcus types may be the infecting agent, type III pneumococcus is the most common single type in this infection and is particularly associated with meningitis in older patients as a sequel to an insidious otitis media or mastoiditis. Since sulphanilamide is effective against this type, determination of the pneumococcus type in meningitis is probably always worth while, for some patients do not easily tolerate sulphapyridine. Indeed the good results obtained with sulphanilamide in the treatment of pneumococcal meningitis (including types other than type III) have prompted Steele and Gottlieb[2] in a recent review to rank it alongside sulphapyridine, which besides being more toxic is less uniformly absorbed. Howard[3] in his report of the recovery of a child aged 1 year—a very rare occurrence at this age even in these sulphonamide days—suggests that sulphathiazole is the drug of choice. If so, it must be given at regular four-hourly intervals for its rapid excretion makes a constant concentration in the tissues difficult to maintain. No-one will now deny that all three of these sulphonamides can miraculously save patients with pneumococcal meningitis, but it is not easy to say what proportion of treated cases do actually recover, for it is inevitable that successes will be published more often than failures, and an analysis of the published cases is not a fair criterion of the case-fatality under sulphonamide therapy. This point is exemplified in the series of 14 cases with only one recovery recorded by Cooke.[4] It will be noted that of his fourteen cases nine were over 45 years of age and two under 2 years which from the prognostic viewpoint are the unfavourable age-groups with sulphonamide therapy: the recovered patient was aged 22. Apart from age, probably the most important

1. Neal, J. B. *J. Amer. med. Ass.* 1935, **105**, 568.
2. Steele, C. A. and Gottlieb, J. *Arch. intern. Med.* 1941, **68**, 211.
3. Howard, S. J. *Lancet*, Nov. 1, 1941, p. 512.
4. Cooke, W. T. *Ibid*, p. 510.

factor in recovery is early institution of chemotherapy. The drug should be given at the first suggestion of meningeal symptoms even though this means treating cases of meningismus, and the initial doses should be large enough to ensure an adequate concentration as early as possible; Steele and Gottlieb suggest a cerebrospinal fluid level of 10 mg. per 100 c.cm. for sulphanilamide and 5 mg. per 100 c.cm. for sulphapyridine. Improvement should be evident within 2–3 days, but the drug should not be discontinued too soon, lest there be a relapse of the infection. As always with sulphapyridine or sulphathiazole, as much fluid as possible should be given in order to avoid deposition of the drug in the urinary tract. Surgical treatment is needed where there is middle-ear or mastoid disease, and these cases usually do well. Opinion is divided on the need for or value of adjuvant serum-treatment, but there is no conclusive evidence that it contributes to recovery.

ESTIMATION OF SULPHONAMIDES IN THE BLOOD

IT is neither necessary nor practicable to estimate the amount of sulphanilamide or its derivatives in the blood of every patient receiving one of these drugs. Apart from research there are occasions when the determination is helpful—for example, in the treatment of pneumococcal meningitis or to make sure that the drug is being adequately absorbed when an infection fails to respond to treatment. Various methods have been elaborated for the determination; they usually depend on preliminary diazotisation of the sulphonamide followed by conjugation with an aromatic amine. Sheftel[1] has described a bedside micro modification of Marshall's method. Conjugation is effected with N(1-naphthyl)-ethylenediamine dihydrochloride, all the reagents being added in the form of tablets to the blood diluted with water, the final colour being compared with a lucite wedge in a special colorimeter. Sheftel uses the same wedge for estimating sulphanilamide, sulphapyridine and sulphathiazole and does not mention the difficulties of comparison due to differences in the colours given by the three compounds. As a bedside method the results should be adequate and the principal objection to the method seems to be the necessity for a special colorimeter. Scott[2] discusses a simplification of the macroscopic laboratory methods which employ dimethyl-α-naphthylamine. His method as applied to blood-plasma should avoid the errors arising from adsorption of sulphonamide on the protein, an error which various observers have shown to amount to 5 or 10%. Scott describes the application of the method to whole blood, and while this is less satisfactory there are occasions when, because of hæmolysis or because only a small amount of blood can be obtained, plasma cannot be used.

CUCUMBER SEEDS AND CLINICAL MEDICINE

A MATERIAL advance in knowledge often follows an improvement in the technique of assay. But some of the newer methods involve the use of biological reagents which seem, to those not hardened to it by experience, to be bizarre and much too fantastic to be of use to ordinary men. Some of the more exotic methods for the biological assay of the sex hormones may be recalled in this connexion. It may even seem rather a far cry to many clinicians from cucumber seeds to scurvy, but, nevertheless, there is a connexion, and it is really a simple and logical one. Cucumber seeds contain a very active enzyme which oxidises ascorbic acid. Meiklejohn and Stewart[3] have taken advantage of this fact to elaborate what promises to be an elegant method for the determination of the antiscorbutic vitamin. The principle may be compared with the one, more familiar to medical men, of using an enzyme from the Jack, or Soya bean, to determine the amount of urea in blood or urine. The great advantage of Meikeljohn and Stewart's method over the older ones for estimating the amount of ascorbic acid in, let us say, urine, is the specificity which it introduces into the assay. Nothing but ascorbic acid will react, which is far from being the case with the older methods. As described, the method is naturally a little more complicated than the older ones, but it involves no elaborate apparatus and its manipulation ought to be relatively simple. Incidentally, in the course of their research, Meiklejohn and Stewart have made a pretty little contribution to pure science, by showing that the enzyme which oxidises ascorbic acid is a copper protein compound. It must give them considerable intellectual satisfaction, in these days of death, to think that they have been instrumental in discovering one of the biological functions of copper, and demonstrating one of the reasons why minute quantities of it seem to be essential to life.

1. Sheftel, A. G. *J. Amer. med. Ass.* 1941, **117**, 439.
2. Scott, L. D. *Brit. J. exp. Path.* August, 1941, p. 220.
3. Meiklejohn, G. T. and Stewart, C. P. *Biochem. J.* 1941, **35**, 755, 761.

TUBERCULOUS RHEUMATISM

THE forty years that have elapsed since Poncet[1] introduced the concept of "tuberculous toxic polyarthritis" have seen much argument as to whether the syndrome exists, but relatively little fact that was either relevant to the issue or incontrovertible. The extensive review covering 240 references by Brav and Hench[2] in 1934 concluded that evidence on which to base the concept was lacking. Copeman[3] in this country was able to find only 12 case-records in the literature; typical tubercles were found in one out of four biopsies. Proof that the syndrome is distinct both from rheumatoid arthritis in a patient with tuberculosis and from tuberculosis affecting several joints (which it occasionally does) must depend on the demonstration of a histological appearance differing from either. Kling and Levine[4] have now published a full and carefully documented account of one such supposed case, with a previous history of "open" tuberculosis, an arthritis thought to be of rheumatoid type in the left knee, and fleeting pains in various other joints. European observers diagnosed Poncet-type rheumatism. A synovectomy revealed, histologically, fibrotic tubercles and caseation with a few acid-fast bacilli, a positive culture and positive animal inoculation. The conclusion reached is that a mild type of tuberculous polyarthritis does occur, due to hæmatogenous infection from a visceral focus associated with high tissue resistance. The use of Poncet's term "rhumatisme tuberculeux" should be avoided, for it leads only to confusion; the diagnosis made should be either "rheumatoid arthritis" or "non-destructive tuberculous arthritis." In this country we seldom diagnose "tuberculous rheumatism," but it seems possible that some cases of this nature are masquerading as "atypical, or monarticular, rheumatoid arthritis" to the detriment of the patient and the public. The failure of aspiration to give confirmation in proved cases of tuberculous arthritis points to biopsy as the only certain and incontrovertible proof. This should, in selected cases, be more often practised.

1. Poncet, A. *Lyon Méd.* 1902, **99**, 65.
2. Brav, E. A. and Hench, P. S. *J. Bone Jt Surg.* 1934, **16**, 839.
3. Copeman, W. S. C. *Rep. chron. rheum. Dis.* 1936, **2**, 24.
4. Kling, D. H. and Levine, M. A. *Arch. Surg.* 1941, **42**, 956.

Surgeon Rear-Admiral G. GORDON-TAYLOR, F.R.C.S., has arrived in Boston to attend the clinical congress of the American College of Surgeons as a representative of the Royal Navy and the Royal College of Surgeons of England.

The Minister of Health has asked that tuberculosis notifications from county councils, county borough councils, urban and rural district councils and joint tuberculosis boards shall reach his department not later than six days after the end of the four-weekly periods to which the returns relate.

Special Articles

JUVENILE DELINQUENCY IN WAR-TIME

REPORT FROM THE BRISTOL CHILD-GUIDANCE CLINIC

F. H. BODMAN, M.D. BRIST.
ACTING DIRECTOR, BRISTOL CHILD GUIDANCE CLINIC

M. I. DUNSDON, M.A.
PSYCHOLOGIST TO THE BRISTOL EDUCATION COMMITTEE

AN analysis has been made of the cases referred by magistrates and probation officers to the Bristol child-guidance clinic during the past two years. These cases constitute approximately a third of all the children actually charged, and these delinquents in their turn represent only a small proportion of the socially unsatisfactory and incompetent group in the population. It is however a significant proportion, since it is obviously constituted by those whose degree of incompetence is sufficiently serious to prevent their making a satisfactory social adjustment without some special provision for training.

The period April, 1939–40, can be taken as an example of a peace-time era, because the war, as far as this country was concerned, was then in a latent state. The period April, 1940–41, can be considered representative of a war year. Restrictions had been increased, bombing had begun in June and the war had involved in some way practically every family in Bristol.

CASES REFERRED TO THE CLINIC

The number of juvenile offenders who were charged and referred by magistrates and probation officers to the clinic was 68 in 1939–40, and 100 in 1940–41. These children have been classified into groups according to their intelligence (see table).

Group	I.Q.	1939–40	1940–41
		Per cent.	
Normal	86 and over	69	46
Very dull	70–85	7·4	31
High-grade feeble-minded ..	55–70	22·1	21
Certifiable mental defective ..	under 55	1·5	2
Total subnormal	under 85	31	54

An analysis of the war-year cases shows not only a heavy incidence of recidivism (39%) but also an additional and almost equally large group of children (30%) who had committed previous offences—in some cases as many as 11—for which no charge had been preferred. Though technically first offenders, they were in actual fact far from so being. Thus, in all, 69% had committed previous offences.

A further analysis of the recidivist figures brought out the serious problem presented by the very dull section (intelligence quotient 70–85). Intelligence distribution among 39 children previously charged was as follows:

I.Q. under 70 ..	8 (21%)	86–100	9 (23%)
70–85	19 (49%)	Over 100	3 (7%)

The importance in social adjustment of a normal home background with adequate and consistent domestic discipline, and the unsatisfactory state of affairs which results when these factors are missing is indicated by the following figures:

	Per cent.
Parents divorced, separated or deserted	15
One parent dead, away from home for long periods, or both parents working	15
Other domestic factors	22
Total	52

Out of this 52% it will be seen that in at least 30% a "broken home" was a contributory factor.

Parallel with these analyses, an assessment was made of the children who were seriously backward in their school work, even when full allowance had been made for their limited mental capacity; 63% fell in this group in 1939–40, and 47% in 1940–41. In both years, twice as many offences were committed in the half year October to April as in the April to October half. Among the mentally subnormal groups, however, the numbers in the winter were twice those of the summer months in the peace year, and had risen in the war year to three times those of the summer months.

DISTRIBUTION OF THE INCREASE

There has been a 47% general increase in the numbers referred from the juvenile courts in the war period 1940–41 compared with 1939–40. Among the mentally subnormal groups, the increase has been a disproportionately greater one of 74%.

Normal children.—It is encouraging to notice that among children of normal mentality there have been considerably fewer charges during the war period. Whether the decrease of 23% indicates actually fewer offences in this group, or whether the apparent decline is merely the result of more opportunities of committing offences with less chance of discovery, is impossible to discuss from these figures. There are, however, justifiable grounds for believing that the more intelligent children are more readily able to find substitute occupations and recreations when their normal outlets are closed or reduced by war-time conditions. When fathers are in the Forces or mothers are at work, many of these children now assume greater responsibilities and tend to take a larger share in the organisation of the home and in consequence have less time on their hands for possible mischief.

Very dull children.—The main rise in numbers has been in the group of children classified as very dull. In this group (I.Q. 70–85) the numbers have risen sixfold and they now account for nearly a third of the total cases. These children at 14 have mental ages ranging from 9½ to 11½ years. They have little foresight and are unable to work out in advance the consequence of their actions. Their memories are poor so that they learn very slowly from experience. Being less critical, they are more suggestible and easily led astray. With these handicaps they require more supervision than children of normal intelligence and though not actually defective they are often mentally inefficient. Under war conditions they are receiving not more but less supervision. In many cases the father has left home for the Forces, or is less often at home, either working on night shift or overtime in armaments factories, or is in one of the civil defence services. In some cases, the mother also has less time in the home than formerly; she is either working on munitions or in the defence services, or is in some other way attempting to supplement the family income to meet rising costs.

Added to the decrease in parental supervision, there is also the effect of the disorganisation necessarily brought about in the schools by damage, evacuation of personnel, altered hours of work and disturbed nights. School-attendance officers are heavily overworked. Yet they often have to waste valuable time in abortive efforts to make contact with the parents of children who for no other reason than lack of supervision are failing to attend school. These seriously dull children have more drive than those in the more defective groups, but their drive is often uncontrolled and misdirected. It is not surprising that the main increase in juvenile delinquency comes from this group.

High-grade feeble-minded children.—These children at 14 have mental capacities equivalent to children of 7¼–9¼ years. They are certifiable under the Education Act 1921, but not under the Mental Deficiency Act 1927. In this group (I.Q. 55–70) the actual numbers during the war year rose by 40%, though the proportional incidence remained constant at about 21%, or a fifth of all cases. This percentage is alarming, since the proportion of people normally found to fall in this group from a cross-section of the whole population is only 1·5–2%. These children are not suitable candidates for institutions or colonies for the lower grades of defect. With suitable training they should become economically independent adults; from their ranks are drawn a large proportion of the casual labourers and unskilled artisans essential to industry and the maintenance of the public services. On the other hand, they are unlikely to benefit from residence in a Home Office approved school. They find difficulty in grasping the relation between cause and effect, and with the handicap of a poor memory they lack common foresight and cannot readily learn from

previous experience. They do not give satisfaction on probation, for though they are often suggestible and readily give promises they are incapable of keeping these promises of better behaviour without consistent supervision, and seldom see any connexion between their actions and the consequences. There is thus no satisfactory provision for them and they remain a dangerously weak link in the social structure.

Certifiable defectives.—The last and smallest group to which attention is drawn is that of defectives certifiable under the Mental Deficiency Act 1927.

These children (I.Q. under 55) at 14 have a mental age below that of an average child of 7½ years. The actual percentage of these sent by the juvenile court to the clinic remained the same in the war year as in the previous year (about 2% of all cases) although twice as many of these children were actually referred. Very few of these defectives have sufficient initiative to get into serious trouble, and such cases as pass through the courts have as a rule been exploited by people with relatively higher intelligence. It should be noted that of 40 children belonging to the last two groups of defectives referred from the juvenile court, only one had attended a special school; the other 39 had attended an ordinary elementary school. Incidentally, in a period earlier than the two years under discussion, out of 70 juvenile-court cases who were defectives only one had been to a special school. It does not require much imagination to envisage the wastage which this state of affairs involves in the efforts of the school staffs, in the slowing down of the education of the more normal children, and in the apathy induced in these defective children by failure to keep up with the normal curriculum.

The extent of recidivism, particularly among the more seriously dull groups, points clearly to the present lack of appropriate provision for dealing with those who are mentally incapable of profiting from warnings and who do not understand the meaning of probation as a period in which to prove their ability and their intention to keep out of future trouble. Their attitude in fact is rather that probation offers a "soft option" and they feel that they have justifiable cause for resentment and complaint if probation is not renewed on the occasion of further charges. In the borderline groups (I.Q. under 85) it is hardly surprising that they should take this view since, when approved schools are unwilling to accept them, there is no other course open to the magistrates. That birching has not the deterrent effect in these dull children commonly attributed to it has been proved over and over again by the number of cases in which such punishment has been carried out as often as four or five times in as many weeks, without any improvement in the attitude of those who have received it.

HOME AND EDUCATION

Present abnormal conditions are revealing more clearly than ever the importance of consistent home discipline and normal family life as major factors in social adjustment. Juvenile court cases for the past year provide evidence for study of the factors which are hampering preventive measures. Economic deprivation in itself is not so great an aggravating factor in the increase in juvenile delinquency as the lack of consistent parental control. Occasional sporadic attempts at severe punishment for misdemeanours which are as frequently condoned or allowed to pass unchecked results in an equally unreliable attitude on the part of the child, especially when the parents' attitude swings unaccountably from injudicious harshness to foolish leniency. Many parents in court, fearing that they will be censured, attempt to give a misleading impression of having exerted a satisfactory degree of control, but directly they feel that the immediate crisis has passed relapse into their favourite attitude of laissez-faire. Such parents cannot be relied on to coöperate satisfactorily in probation. It is significant that in more than half the cases charged during the past year there was evidence of lack of normal home discipline. Present social conditions are undoubtedly contributing to an increased number of homes where parents are absent for long periods, or where owing to the demands of night work they must sleep during the daytime and so cannot give normal supervision. Lack of control cannot be attributed to war conditions alone. In 15% of cases there was a history of unsatisfactory matrimonial situations, while in a further 22% none of these factors was present and lack of control was mainly due to poor intelligence or ineffectual handling on the part of both parents.

Backwardness in school work was further investigated among the juvenile delinquents and a very high proportion of educationally retarded children was found. These children had failed to reach their possible level, even when full allowance was made for their intellectual defects. Among juvenile delinquents of school age, there has been a rise of 6% in those children who are failing to make the progress of which they are mentally capable. This figure does not include those dull and defective children who are working up to their limited capacities. These educationally backward children are acquiring or have already acquired a habit of failure, they are beginning to drift and will continue to do so when they leave school. Of children of employable age, we found 60% seriously educationally retarded in the fundamental subjects. This figure for Bristol delinquents closely corresponds to the percentage of children found to be seriously educationally retarded among 4000 juvenile delinquents examined in the London metropolitan area a few years ago.

The long blackout hours in winter involve restrictions of many possible outlets which are available in the long summer evenings. These restrictions are felt to some extent by everyone, but whereas people of normal abilities are able to find recreation in reading or in constructive occupations and hobbies those children who lack both interest and skill in such pastimes spend their leisure time in aimless wandering and street gang play and do not easily discover substitute occupations. Such children are only too ready to take advantage of the opportunities to enter damaged buildings, and to tamper with the easily accessible A.R.P. equipment in public shelters, without either realising or considering the possibility that their actions may involve other people's safety or property. Many of them come from housing estates of the slum-clearance type. Geographically healthy, these estates are too large to have any sort of social cohesion, while opportunities for corporate life and recreation are fewer than were available in the neighbourhoods from which the families originally were moved.

RECOMMENDATIONS

War conditions, including evacuation, necessitate a short-term policy during the war and a long-term policy for peace-time conditions. Ascertainment of dull children in the schools should of course be continued and if possible extended. At present, there is little or no provision for half the class of children coming before the juvenile court in increasingly large numbers.

Very dull children (I.Q. 70–85) are not certifiable under either act, and neither can nor should be segregated with lower grade defectives (I.Q. under 55) in colonies. On the other hand, they are not welcomed by the headmasters of approved schools, and rightly so, since they cannot benefit from the curriculum of the ordinary approved school. At present these cases can only be put on probation, and in spite of the devoted labours of the probation officers it must be acknowledged that results in this group are unsatisfactory. Very dull children over school age are found by employers to be poor workmen, and in consequence they are always changing their occupation. Parental discipline is often absent, owing to war conditions, and opportunities for adventure are multiplied, particularly in bombed areas. Much more supervision than a weekly interview by the probation officer is required in these cases. As things are the child comes again and again before the court, and the numbers of such children are far out of proportion to their percentage incidence in the population.

A special approved school is needed for these children, with an appropriately adjusted curriculum in which class-work should occupy only part of the time and should be linked with occupational training suitable for their limited capacities and likely to be an important factor in fitting them to live in the general community. Eighteen months or two years in such a school would condition these children and provide them with the necessary day to day supervision and discipline which is so badly needed. If an effort were made to train them to make full use of their capacities, even if limited, they should

be able to take up a suitable occupation on discharge with some hope of permanence.

The same remarks apply to high-grade feeble-minded children (I.Q. 55–70). These are certifiable under the Education Act, and if of school age can be sent to a special school, but they are not certifiable under the Mental Deficiency Act, and are not suitable for segregation in existing colonies, which are intended for those whose social incompetence is of such a degree that they are incapable of attaining economic independence. It is even more difficult to find suitable employment for them than for the very dull, and they are extremely difficult to supervise on probation; moreover, their parents are often borderline or actual defectives, and are unable to exercise proper discipline. Were there suitable provision in residential special schools for many of this type, it is unlikely that anything like the disproportionately large numbers of them now being charged would ever have to appear in court. The heavy incidence of delinquency among them is not merely a war effect; in more normal times anything from 10 to 15 times as many cases appear to be drawn from this group as should reasonably be expected if they appeared roughly in proportion to their incidence in the general population.

Many certifiable defectives (I.Q. under 55) who come before the courts would never have been charged had they been given the chance of training at a day occupation centre, which if properly organised should fit some for partial self-support and would at least keep others out of mischief. Those who in spite of such training, or from lack of suitable home circumstances, were found still to be incapable of social adjustment should, of course, be certified and sent to a colony.

Evacuation.—Neither the high-grade feeble-minded (I.Q. 55–70) nor the defectives (I.Q. under 55) are suitable for evacuation to ordinary billets in reception areas. Quite a number, however, have been sent and have given a good deal of trouble to the foster parents and to the authorities in the reception areas. Children with I.Q. under 55 cannot be expected to receive from the ordinary billeting arrangements that training and supervision which colony placement provides. They should therefore be certified and sent to such institutes as are provided in comparatively safe districts outside the city. Children with I.Q. 55–70 should normally be certified under the Education Act and sent to a special school, though nothing like full advantage has been taken of the available powers, partly because of the limited accommodation available in Bristol. These children, if evacuated, should go en bloc, as a residential school or schools. They require special supervision and teaching which cannot be provided in the ordinary billets or in the ordinary rural schools—which, with the advent of evacuees, are usually understaffed.

Some of the very dull group (I.Q. 70–85) would also do better in a residential school or farm institute than in ordinary billets. This applies particularly to those who have been in frequent trouble. School work would not take up all the syllabus, and a good deal of time could usefully be spent in outdoor work or in an occupational centre which could be easily provided in a farm school.

Children remaining at home.—In all cases where parental supervision is inadequate and a child is defective within the meaning of the act, he should be sent to a colony outside the target area. The high-grade feeble-minded (I.Q. 55–70) should be drafted into a special school, where there should soon be more places available owing to evacuation. It is to be hoped that magistrates and teachers will encourage parents to take advantage of special day-school provision. For the group of very dull children (I.Q. 70–85) who form the "C" and "D" streams in many schools, it would probably be useful if less class-work and more occupational work could be arranged.

For all groups, during the winter, further organisation of leisure is needed to provide outlets for misdirected energies and the desire for adventure normal in the growing boy and girl. Much good work has been done on a small scale during the past winter in the social centres which have sprung up all over the city in crypt and basement shelters. These provided the atmosphere of a club where neighbours could meet their friends in the evening in safety, and replaced to some extent the usual recreations made impossible by the blackout and A.R.P. More centres might be developed on these lines in places of safety, where parents could send their children, not to sleep but to spend the evening. Recreational facilities such as film shows and concerts in these centres might be expanded.

Long-term policy should be preventive. The present provision for both very dull and defective children is inadequate. It is essential that sufficient special school accommodation should be provided after the war for the group of high-grade feeble-minded, and one such school should be residential. Early ascertainment and the transfer of children with I.Q. 55–70 to a special school where the curriculum will be suited to their special requirements, including occupational training, will be desirable if these children are to be brought up as good citizens playing their parts according to their talents. If they are to be prevented from drifting into an apathetic state in which they are only conscious of all-round failure, or into a situation where they can evade all training and education because of lack of provision for their needs, it will be necessary to develop what skill they have so that they may take that pride in their work which is necessary to every citizen's self-respect.

We wish to thank Councillor F. C. Williams, chairman of Bristol education committee, for permission to publish this paper, and Lady Inskip and Dr. J. F. Lyons for their interest.

PARALLELS IN NURSING PROBLEMS

AFRICA is in the act of developing a nursing service to meet the special needs of a scattered and superstitious rural community. It might seem on the face of it that nursing problems encountered there must differ fundamentally from those which trouble us here; but Dr. Janet Welch's study [1] of nursing education in relation to the cultural background in East and South-East African colonies shows that we can learn from their difficulties, as they can learn from our mistakes. Speaking at a meeting of the Overseas Association of the Medical Women's Federation on Oct. 20, Dr. Welch said that it would be difficult to set up any systematic form of nursing education in the African colonies until it was clear whether the policy of the medical authorities was going to put emphasis on curative or preventive work. She believed that the hospitals must be centres of social teaching and the nurses must be trained as community nurses from the start, with a sound education in the preventive aspects of hygiene, midwifery, maternity and child-welfare work, and nutrition.

A BACKGROUND OF WITCHCRAFT

In Africa, as here, the standard of education in the nursing candidate is often lower than could be wished. But whereas here secondary education is available for all who attain a given standard, in many African districts primary education alone is available. Thus at the time of Dr. Welch's survey, Makerere College in Uganda was giving a full secondary education course, and several other schools were giving incomplete courses; in Kenya there were no schools giving a full secondary course but two grant-aided missionary schools offered junior secondary standard; in Tanganyika five schools were giving some secondary education and in Nyasaland and Northern Rhodesia no secondary education was available. It is difficult, even in England, with a background of Western culture, to imbue some of the girls now enrolling with any precise idea of the principles underlying aseptic technique and barrier nursing. With an African girl coming from a home where sickness is automatically attributed to witchcraft, and to whom the idea of bacteria as a cause of disease is completely foreign, the difficulty is formidable. If she has reached standard six she may be able to follow simple explanations in English; if not she must be taught in the vernacular. Yet these obstacles can be overcome and Dr. Welch records how.

She introduced a group of African mothers in a village clinic to the conception of bacteria by easy stages, first

1. Made possible by a grant from the Carnegie Corporation, New York, and printed by the King's Crown Press, a division of the Columbia University Press. It can be obtained from the Carnegie Corporation, New York City, or from Miss Wrong, International Committee on Christian Literature, 2 Eaton Gate, London, S.W.1.

showing them how spectacles—with which they were familiar—enlarged the size of letters; then letting them magnify common objects with a hand lens, so that they came to realise that invisible things might be enlarged until they became visible. After this the women were introduced to the microscope and quickly learned to see new detail in familiar objects—dust on a hair, dirt on a fly's leg, pollen in a flower. Then followed a discussion of the idea that invisible things might have life—things smaller than a mite—and the women were sent to draw water from the stream which they used for bathing, drinking and washing. "The demonstration of amœbæ and other microscopic water life in what appeared to them as clear water astounds them, but convinces them of the world of micro-organisms in a way that weeks of verbal description would not." It is easy to make the final step and persuade them that some living organisms are the cause of disease if they enter the body.

This "laboratory approach" would make it possible to teach the nurse the principles underlying her training, and also to introduce the preventive aspects of her work from the start.

GIVE ME THE FIRST YEAR AND ——

Many of the African girls marry and leave the nursing school within a year of entering. During their first year they are used largely as unskilled labour to run the hospitals, and there is little attempt to equip them as future educators of their people. Dr. Welch believes that the first year of training can be so planned that it is a unit in itself, providing the nurse with standards and principles for the prevention of disease. Thus, however short her training, she would return to her home fit to teach her friends something better and to establish new ideas of hygiene, nutrition and the care of the child. This is especially important in Africa because the women control the acceptance of new ideas. Many of the tribes were originally matrilinear in structure, and the women maintain their authority because of their importance in the social economy of the tribe as planters, reapers and marketers of the crops. Thus any advance in public health must first win the approval of the women, many of whom are jealous guardians of tribal medical practices. They are largely inaccessible to teaching from medical men, especially in obstetrics, for most of them will not tolerate the presence of a man at a confinement. The one person likely to gain their ear is a fellow African woman trained as a community nurse. Dr. Welch has proposed a first-year course for the student nurse in which this principle is accepted.

In her first term the student is introduced to microbiology in the manner described, to anatomy, physiology and very simple biochemistry (as a background to the understanding of nutrition); to the ways in which health can be maintained in the community and the family, to the history of medicine and nursing told like a story; and to simple nursing arts. Thus at the outset her attention is oriented not to sickness but to health and its maintenance. She is also encouraged to discuss the magical practices of her people and to see how some have aspects in common with her new knowledge, while some are dangerous; and she must be taught how to teach all this to others.

In her second term she begins the study of nutrition and of diets for infants and children, and is helped to adjust herself to the social and ethical duties of the professional nurse.

In her third term, in addition to her other studies, she learns the properties and dosage of drugs—important for a people who use active herbs in dangerous quantities in their magic—and is introduced to sick nursing and to the study of the common diseases of the country, including communicable diseases.

EX AFRICA ALIQUID NOVI

This course, with its emphasis on health and prevention, on principles and practical work, might well be modified to suit English conditions and be taken by our own first-year nurses. But clearly it could never be demanded of a girl who is expected at the same time to give routine service in the hospital wards. It is a course for a student, not an apprentice. Dr. Welch hopes to see African nursing freed at the outset from one of the gravest handicaps of our own system. The British student is expected to give long hours of service which prevent her from making the best use of what systematic instruction she receives; lectures attended after a day in the ward must be outstanding if they are to excite more than languid attention. The defect could be largely overcome if the nursing school existed purely to train and turn out the best possible nurses, and if it was financially independent of the hospital, which would have to be run by its own fully qualified staff. This has been tried successfully in America and Canada, and in various European hospitals established by the Rockefeller Foundation after the last war. In such a hospital in Warsaw an entire ward at a time is given over to the students under the charge of the staff of the school of nursing. All the nursing in the ward is carried out by the students, supervised by their teachers, and the cases allotted to them demand a gradually increasing degree of knowledge and skill. At the end of a chosen period the ward is exchanged for another one in which students can gain a different type of experience. Dr. Welch commends this system and suggests that the hours spent by student nurses in the wards should be graded; thus they would begin by spending only one or two hours a day in the ward, the rest of the day being used for instruction in the other items of the course. The working week in the first year would occupy 29–38 hours, with Saturday and Sunday off in the first term, and Saturday afternoon and Sunday in the second and third terms; there would be a month's holiday in the year. This seems to us a reasonable study-week, in line with the hours worked by university students. We can see no excuse for the custom by which a student nurse is expected to work harder than any other class of student; nor is an eighteen-year-old girl physically fitted to spend long arduous hours in contact with the chances of infection which a hospital offers. A reform in our system of nursing to this or a comparable pattern would do much to make the profession attractive to our more intelligent girls.

THE KIDNEYS AND HYPERTENSION

EXPERIMENTAL PROGRESS

WE have known for several years that renal ischæmia experimentally produced causes hypertension in animals. Goldblatt summarised [1] the available experimental data in 1938, when it was already recognised that if such experimental ischæmia was severe enough to impair renal excretion arteriosclerotic lesions would begin to develop similar to those found in essential hypertension in man. It was clear, too, that the rise of tension was produced by some biochemical agent, not by a nervous mechanism. Since then we have learned a good deal more, thanks largely to independent groups of workers in the Argentine and in Indianapolis, and it is possible to set out briefly the points on which they agree. The normal kidney secretes a substance called renin, first described by Tigerstedt and Bergmann in 1893; renin is a pressor substance and was believed until recently to be a vasoconstrictor. Actually, the story is much more complicated than that: renin acts as a proteolytic enzyme on a globulin ("hypertensin precursor") present in normal serum, and converts it into a substance called hypertensin. The Argentine workers consider that renin only has a pressor action because it produces hypertensin, which they regard as the immediate cause of the rise in blood-pressure. The Indianapolis workers, however, have embroidered the theme by showing that hypertensin is not a vasoconstrictor itself, but can only cause vasoconstriction when activated by another substance present in the blood. As if this did not make matters complicated enough, both groups of workers agree that the blood contains a substance which destroys or inhibits the action of hypertensin; and the Indianapolis group go further and say there is a substance which inhibits activated hypertensin as well. With all these substances being manufactured at varying rates it is easy to see that hypertension in man may have multiple causes.

The first step leading to the opinions just set out was the demonstration that venous blood flowing from an ischæmic dog kidney had a vasoconstrictor action on the Lawen-Trendelenburg toad preparation.[2] More-

1. Goldblatt, H. *Bull. N.Y. Acad. Med.* 1938, **14**, 523.
2. Fasciolo, J. C., Houssay, B. A. and Taquini, A. C. *J. Physiol.* 1938, **94**, 281.

over, if an ischæmic kidney from a dog was transplanted into the neck of another dog the second dog's blood-pressure rose.[3] Again, if the renal vessels of a dog are clamped, the blood-pressure rises when the clamp is released. Although these results had been confirmed many times, observers still doubted whether there was enough pressor substance present in the systemic blood to account for the hypertension. Workers in Toronto,[4] however, showed in cross-circulation experiments that if blood from hypertensive dogs was transfused into nephrectomised dogs there was a transient rise of blood-pressure in the recipients. They thought that other workers had failed to get this pressor effect either because too little blood had been transfused or because the receiving animals had intact kidneys (there is plenty of evidence that normal kidney tissue will inactivate the pressor substance formed in the ischæmic kidney). In their own experiments they used a special pump which ensured that the same quantity of blood passed in each direction, and transferred about 3 litres per hour. Thus the substance or substances produced by the ischæmic kidney were present in the blood in sufficient quantity to cause a rise in blood-pressure. The next step was to investigate these substances. The Indianapolis workers showed that renin in Ringer's solution did not constrict the blood-vessels in an isolated dog's tail[5]; when blood was added to the solution, however, vasoconstriction occurred. Thus it was clear that renin alone had no pressor effect: it acted on some constituent of the blood to produce a vasoconstrictor substance. This is the substance which the Argentine workers had called hypertensin; the Indianapolis workers unfortunately named it angiotonin,[6] thus adding verbal confusion to a subject already reasonably tricky. From accounts of the properties of the two substances there is little doubt that they are identical, and the earlier term "hypertensin" will be used here. Both groups of workers demonstrated[6,7] that renin acted on a globulin—found in the blood but not in other tissues—to produce hypertensin; and that hypertensin had a smaller molecule than its precursor. They also showed that the concentration of hypertensin produced depended on the amount of the globulin present and was largely independent of the amount of renin; and this, together with the facts that renin is heat labile and acts best at a given pH, suggested that it was a proteolytic enzyme. Some of the Indianapolis workers isolated a crystalline picrate and oxalate of hypertensin, but give no melting points or elementary compositions in their paper. The Argentine workers[8] find that hypertensin is inactivated by pepsin, and regard it as polypeptide, though it is reported from Indianapolis to give a negative biuret reaction. The Argentine workers find that when renin is incubated with blood the hypertensin content first increases rapidly, then diminishes and finally disappears; this is held to be due to the action of an inhibiting substance called hypertensinase. Since hypertensinase is also heat labile and has an optimal pH for its action, it too may be regarded as an enzyme. Other observations are that hypertensin-precursor is diminished by injection of renin and increased by nephrectomy; and that nephrectomy also decreases the hypertensinase present in the blood. These observations explain why nephrectomised animals are more sensitive than intact ones to both renin and hypertensin; and also why animals soon develop a tolerance (tachyphylaxis) to repeated renin injections but not to repeated injections of hypertensin. These findings agree in general with those of the Indianapolis group, who have further shown[9] that hypertensin in Ringer's solution produced vasoconstriction in the isolated rabbit ear only on the first trial or two; after these trials, the vasoconstrictor action was lost, and was only recovered when fresh blood was added to the perfusing fluid. Hence arose the conception of a hypertensin-activator. If blood from nephrectomised dogs is used in such perfusion experiments, the vasoconstrictor activity of the hypertensin is greater than it is with normal blood; yet the effect with normal blood is maximal in the sense that no increase in vasoconstriction can be produced by increasing the amount of blood used in the experiment. Thus it can be supposed that there is an inhibitor substance present in normal blood which is diminished by nephrectomy. There is evidence that this substance is not hypertensinase.

Hypertension, then, may be produced by increased production of renin, hypertensin-precursor or hypertensin-activator; or by decreased production of hypertensinase or hypertensin inhibitor; or by combinations of any of these factors. The existence of hypertensinase and hypertensin-inhibitor offers a hope of a method of treating human hypertension, and already at least three reports have appeared recording lowering of blood-pressure in animals and in patients with hypertension. The extracts of kidney used have been essentially similar and the amounts high. The extract from 100–150 g. of pig kidney has been given daily by Jensen and his colleagues[10] to lower the blood-pressure in rats with experimental hypertension; this figure is slightly lower than that given by Page and his collaborators,[11] who show that the extract from 1000 g. of fresh kidney may have to be injected daily for some weeks to improve patients with malignant hypertension. The claim of Grollman and others[12] that oral administration is effective in rats has not been confirmed by other workers. The rat does however provide a convenient animal for experimental assay so that chemical advances may be speeded, and it is on these advances that clinical application must at present wait.

3. Houssay, B. A. and Fasciolo, *Rev. Soc. Argent. Biol.* 1937, **13**, 284.
4. Solandt, D. Y., Nassim, R. and Cowan, C. R. *Lancet*, 1940, **1**, 873.
5. Kohlstaedt, K. G., Helmer, O. M. and Page, I. H. *Proc. Soc. exp. Biol., N.Y.* 1938, **39**, 214.
6. Page and Helmer, *J. exp. Med.* 1940, **71**, 29.
7. Braun-Menendez, E., Fasciolo, Leloir, L. F. and Munoz, J. M. *Nature, Lond.* 1939, **144**, 980; *J. Physiol.* 1940, **98**, 283.
8. Munoz, Braun-Menendez and Fasciolo, *Amer. J. med. Sci.* 1940, **200**, 608.
9. Page and Helmer, *J. exp. Med.* 1940, **71**, 495.
10. Jensen, H., Corwin, W. C., Tolksdorf, S., Casey, J. J. and Bamman, F. *J. Pharmacol*, 1941, **73**, 38.
11. Page, Helmer, Kohlstaedt, Fouts, P. J. and Kempf, G. F. *J. exp. Med.* 1941, **73**, 7.
12. Grollman, A., Williams, J. R. jun. and Harrison, T. R. *J. biol. Chem.* 1940, **134**, 115.

Infectious Disease in England and Wales

WEEK ENDED OCT. 25

Notifications.—The following cases of infectious disease were notified during the week: smallpox 0; scarlet fever, 1224; whooping-cough, 1985; diphtheria, 1017; paratyphoid, 53; typhoid, 23; measles (excluding rubella), 745; pneumonia (primary or influenzal), 631; puerperal pyrexia, 143; cerebrospinal fever, 88; poliomyelitis, 50; polio-encephalitis, 4; encephalitis lethargica, 2; dysentery, 139; ophthalmia neonatorum, 77. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct. 22 was 1287, including scarlet fever, 167; diphtheria, 280; measles, 20; whooping-cough, 511; enteritis, 22; chicken-pox, 23; erysipelas, 28, mumps, 3; poliomyelitis, 6; dysentery, 18; cerebrospinal fever, 16; puerperal sepsis, 12; enteric fevers, 42; other diseases (non-infectious) 47; not yet diagnosed, 92.

Deaths.—In 126 great towns there were no deaths from measles or enteric fevers (1 from enteric in Greater London), 2 (0) from scarlet fever, 16 (2) from whooping-cough, 31 (3) from diphtheria, 56 (3) from diarrhœa and enteritis under 2 years, and 15 (0) from influenza. The figures in parentheses are those for London itself.

Fatal cases of diphtheria were scattered over 19 great towns, Liverpool reporting 4. There were 8 deaths from diarrhœa in Manchester and 7 in Birmingham.

The number of stillbirths notified during the week was 176 (corresponding to a rate of 32 per thousand total births), including 20 in London.

NUTRITION IN IRELAND.—The *Irish Press* of Oct. 17 announces that a dietetic council has been set up "to experiment on ways and means of aiding the people's nutrition under war-time conditions, paying special attention to children's diet." The following have been appointed: Dr. P. T. O'Farrell (chairman), Prof. W. J. E. Jessop (secretary), Prof. W. R. Fearon, Dr. Catherine O'Brien, Dr. John Mowbray and Dr. Oliver FitzGerald.

Public Health

Future of the School Medical Service

Dr. E. H. Wilkins [1] has lately suggested some reforms to improve the school medical service and make it coherent with any general plan for a complete medical service for the nation. He divides the existing defects of the school service into those remediable by changes within the sphere of the service itself or of public hygiene, and those which are bound up with the progress of general social welfare. The school medical officer, unlike his colleagues in other branches of the profession with the exception of the obstetricians, deals mainly with people who are, or are presumed to be, healthy, so most of his work is more closely allied to social amenities than to the treatment of the sick. Yet he came into existence with the object of doing work which is strictly medical—to detect and obtain treatment for children who were unhealthy and who, in the state of medical practice as it was 35 years ago, missed the attention of the family doctor which they should have received. He has always been difficult to place in the medical hierarchy and in consequence occupies a somewhat low position though in fact his work is now the highest objective of the medical profession. Wilkins takes the view most generally held that the school service should be incorporated with the other health services, the medical officer of health being the chief school medical officer and the assistant school medical officer also assistant medical officer of health. The advantages of this system are fairly obvious, but it has several drawbacks. James Kerr pleaded consistently for the separation of school medicine from general public health, though his immediate successors who were independent of the public-health office were in general not in favour of the separation. The objection to the fusion is that school medicine has become highly specialised; to be successful the practitioner must give his life to it, and it is not in the interest of the work or of those who undertake it that school medicine should be a side issue and a stepping-stone to general public health. The advantages of liaison of school work with other public-health functions, especially with infant welfare, outweigh all possible disadvantages so far as the service is concerned, but the subsidiary position of those who do the school work is against its development. A matter which gave rise to much contention in the past is the relationship of school medical officers with general practitioners. School medicine was one of the first and certainly the greatest of the encroachments of public medicine on private practice. This controversy has died down for a time, but it will come up again should the planning of the future of medicine develop on the lines of national health insurance. Specific medical treatment is no real part of school medicine, but supervision and management of children certainly is, and there is no fixed division between what is treatment and what is management.

The reforms needed in the technical part of school medicine must be left to the school medical officers themselves to settle. The discussion over the value of periodic medical inspections, in which Wilkins is emphatically in favour of their retention with several modifications, can be understood only by those who are familiar with the work and with its aims; but the pursuit of its aims calls for great reforms in the social welfare of the people, for poverty in all its aspects and implications is the great stumbling block to the maintenance and development of health. Most of the work of school medical officers is among normals, by which is meant average samples, and its failure has come from confusing normality with full health, a mistake made constantly in all medicine, for we have so little experience of full health that we can hardly be said to know what it is like. We see this mistake outstandingly in the assessment of nutrition, about which Wilkins has much to say. However we may define nutrition, it is certain that the vast majority of children are round about the normal, but it is equally certain that few if any of the normals are in the state of maximum nutrition which alone is the state of health. The achievement of this maximum does not lie within the province of medical attention, but in obtaining the best environmental conditions, especially during the period of development. Wilkins says truly: "The implication that the classifying of 90% of children in the first two of the Board's categories ("excellent" and "normal") indicates that these children are well fed is sheer nonsense, conflicting as it does with a mass of evidence based on ascertained fact." The object of school medicine is to raise the standard of normality in all particulars so that it approaches nearer to full health. This of course calls for some treatment which the medical profession can furnish, but far more for social treatment to raise the level of general environment.

1. *Med. Offr.* Oct. 4, 1941, p. 109.

From the Annual Reports

CHELSEA

From Dr. Leslie McCarthy's brief report for Chelsea we learn why the population shrank from the 1939 figure and the death-rate rose. "Other violence," mainly war casualties, caused some of the total of 851 deaths. Of the other deaths, 204 were due to heart disease, 106 to cancer and 68 to vascular lesions. This suggests that the population of Chelsea which stayed was elderly. As Chelsea was an evacuation area throughout the year the average population will have been less than the mid-year population, so the true death-rate, whether crude or corrected, will be higher than the 22 recorded. What was the standardised rate, which alone reflects the health of the population, will never be known.

EASTBOURNE

This county borough was a reception area in the first half of the year and an evacuation area after the fall of France, since when it has been a restricted area. In contrast to Ramsgate it suffered little from air-raids, and because it has always been more of a residential town for retired people than a holiday resort it has suffered less from the loss of its visiting population than other coastal towns. Dr. J. Fenton's report for 1940, though typewritten and curtailed, does not therefore differ greatly from peace-time reports, and from it one could not tell that there had been any serious disturbance in the town's history except for a decline in the population. The increases in the infectious diseases noticed at the end of 1939 did not continue, with the exception of scabies. Whooping-cough gave 159 notifications, 126 of which occurred in the first quarter, and none in the last four months of the year; and measles 105 notifications, 57 of which occurred in June–August. These seasonal incidences were unusual, for in the country as a whole whooping-cough increased and measles diminished as the year progressed. There was no death from either disease.

RAMSGATE

Dr. J. V. Walker's report is of exceptional interest for in the latter half of 1940 Ramsgate was in a state of siege and subject to repeated air attacks on a heavy scale. In peace-time its population was made up of an unusual proportion of elderly people, and in view of the danger of invasion an evacuation scheme for them was instituted. It was expected that this would be made compulsory, but it was not, so the process of getting the old away to safe areas was both lengthy and incompletely successful. Evacuation of mothers and children offered no special problems, but as the risk of invasion came suddenly it had to be hurried. The normal population of Ramsgate is 34,000, but the statistics are of course based on the estimated population in the middle of 1940. The growth of a troglodyte population in the famous tunnel shelters might have been expected to influence the town's health, but it is doubtless thanks to them that the casualty lists were so small. Of the 490 deaths registered in the town in 1940 the heading "other violence" includes civilian deaths from enemy action. Elsewhere shelters were used as dormitories but at Ramsgate a small proportion of the population shifted their homes underground and seldom came out of the tunnels at all. There was little excuse for this since owing to the evacuation there was ample accommodation. In view of all this we should expect a very unfavourable health record for the town; but excluding the casualties there is no evidence that the town's health has suffered. Indeed, the year's record is that of a healthy year with low prevalence of communicable diseases. There were

no deaths from the typhoid or dysentery groups of diseases and only one death from diarrhœa in an infant of six months. The respiratory deaths numbered 65, but 49 of these were ascribed to bronchitis, suggesting that the comparatively high rate arose from the age of the population and not a high prevalence of respiratory infections.

In England Now

A Running Commentary by Peripatetic Correspondents

I OFTEN try to read a newspaper and listen to the wireless at the same time and generally end up by missing the point of both. Of course there are fellows who can play a dozen games of chess at once and could probably read and listen to a story or two as well, but I'm not one of them. I can't listen to even two tales at once. The other evening I went in to have my pint in the bar parlour of the Locums' Arms. This is where the locums rest between engagements, and there were several there, grousing and drinking. On my right an old locum was holding forth to a friend and over in the corner was a young locum doing the same thing. "Some people," said the Old Locum, "take to war-time rationing con amore." He wiped the froth meditatively off his walrus moustache. "Yes; for other people. My last engagement was a seaside job of three weeks. The man had gone away for a holiday, but his wife who was a part-time invalid stayed to look after me, leastways that's how they put it. Well, for the first breakfast I had a sardine on toast, one. Same thing the next day and the next. I fed alone, but used to see savoury trays—eggs and bacon from the smell—being hurried furtively upstairs. The lady didn't come down till midday. 'Oslo breakfast,' she said one day, 'so healthy!' 'How I wish I were up to them!' said I. 'I had no idea they were having quite such a terrible time in Oslo. Do you mean to tell me they have only one . . .?'" Then I heard the Young Locum's voice away in the corner. "It was only a week's locum, the whole family were going away for a holiday. Before he went the doctor said to me, 'We're having the house done up a bit, hope you won't be disturbed.' Next morning the cook asked if I would mind having lunch in the drawing-room as the whitewashers were in the dining-room, and sleeping in another bedroom. Next day it was: would I mind having meals in the study and sleeping in the nursery. On the fourth day I was having meals in the surgery and sleeping in a dressing-room, but next morning they were both seized by a whole army of painters, paper-hangers, carpenters and whatnot; in fact they had the whole house now except at the very top where there were two rooms, the cook's and another. Of course I had to sleep in the other and heard her snoring. Well, I thought they were going to leave the top storey alone, but I had scarcely finished dressing when the vanguard of this renovating army . . ." "It wasn't as though there was any shortage of food in the house"—it was the O.L. that I was listening-in to now—"the cupboards in my bedroom were simply crammed with tinned meats, jams, pickles, masses of it. Well, it must have been about the sixteenth day and I was getting well into the third row of that tin of sardines . . ." "Apparently" (Y.L. speaking) "they weren't going to touch the cook's room, so I was wondering . . ." "My stomach was definitely in revolt, that damned fish repeats itself like a parrot, so that morning on my rounds I stopped at a shop and bought a tin-opener . . ." "Well, the cook came along as usual and said would I mind . . ." "By Jove, that night I fairly let myself go." Who said that? I'm not sure. It may have been both together. "Time, genelmen, please."

* * *

We have noticed four classes of faint among our donors. Those who throw the first or fourth class should never have been enrolled because they are temperamentally unsuitable: the second variety (a "forme fruste" of the first) is preventable with careful handling, while the third must be attributed to mismanagement of the donor after the withdrawal of the blood.

The first class is seen in the extremely apprehensive donor who may have volunteered from self-disciplinary or purely altruistic reasons, or may have been pressed into service in the presence of his colleagues or fiancée. Such a person may faint in the waiting-room or on the couch while his arm is being cleaned up. At one factory some youths flopped down like ninepins while waiting their turn to be grouped. The sight of bottles of freshly drawn blood or blood-stained gowns, too much theatre ritual or the smell of ether (acetone is not associated by the patient to the same extent with hospitals) may precipitate the faint. This type of person should never have volunteered and if he is recognised at the time of enrolment he should be rejected.

The second class turns up in the person who does not mind the beginning (indeed he may be quite interested and will try and sit up and have a peep at the blood running out) but after a few minutes a feeling of nervousness comes over him; an occasional sigh, a rapid turn away of the head, and a nervous cough are the first signs. He begins to think "will they be able to stop it?" If the doctor leaves the needle in situ and goes away to prepare the next patient, the feeling of insecurity will continue to thrive. During a brief period of hyperacusis he will hear his blood trickling into the diluent in the bottle and he may hear the nurse say "Its running ever so fast: I wish they all bled as quickly as this." The actual faint will follow rapidly and the flow of blood will diminish reflexly. This type of donor has probably fought a strong inclination not to show up for his appointment and he sometimes tries to pass off his nervousness with forced merriment and interest; hence his desire to "have a look" and the occasional pleasantry whereby the shed blood is compared to a favourite brand of stout. With care, this type of donor, who can often be recognised when he comes in by his jocularity and the excessive pulsation of the great vessels of his neck, can be successfully bled, for he will readily take the initiative in conversation which interests him. The doctor should not leave him unattended and mentally unoccupied, while assistants should be discouraged from making comments and quips on the rate of flow. A word of encouragement will help him through his ordeal, and the doctor will be rewarded by "Is that all it is?" and a pressing and genuinely meant request to call him again.

The third kind of faint is a vasomotor attack probably beyond the control of the donor. It is as a rule due to sitting up suddenly and too soon to drink coffee presented by an overzealous helper. This type of faint will also occur, without the donor sitting up, if the blood is withdrawn too quickly. Fasting will also tend to induce it: likewise if the donor is overtired, or has hurried to be in time, or if the atmosphere of the room is oppressive. Some people seem to take longer than the average to adjust their circulations and we have seen this tendency in a mother and daughter who were each unaware of the reaction of the other.

The last class is troublesome; it is the hysterical faint induced whenever an impressive audience is available. The subject is almost invariably a young girl and she should be allowed to faint into the arms of a member of her own sex. A favourite place is in the street outside the bleeding post and unless the offender is skilfully and promptly handled the post and the team may be held in considerable disfavour and distrust by the cross-section of the public who congregate so rapidly for this windfall entertainment. We have seen a husband and wife (only the wife had volunteered) go from one "flt" into another, falling into any kindly arms willing to receive them and causing confusion and consternation among the volunteers in the waiting-room. By the way, it does not seem to be generally known that faints, if complete, may take on an epileptiform character. They can, however, readily be differentiated from hysterical attacks. The act of fainting is commonly followed by a feeling of tiredness and this may be attributed by the donor—and what is more important, by his friends—to the loss of blood. A donor who has fainted should always be warned against this feeling of tiredness, and for the same reason it is unwise to continue withdrawing blood after a faint has begun. Donors should be warned of the possibility of bruising, and of bleeding starting again, and should be told how to deal with bleeding by pressure. They should be warned not to touch the dressing unless the wound is painful and then to show it to a nurse or a doctor. Over the tea-table, when the donor has returned home, she will probably be invited

to relate her experiences and the kid brother and his friend will certainly want to have a peep at "the hole in the arm." This understandable curiosity is probably the comonest cause of local sepsis.

* * *

It has taken a second world war to convince me that pectoralis major is intimately concerned in the act of defæcation. But I must begin at the beginning. My gardener was called up last year and I was obliged to tackle a third of an acre singlehanded. I mow the lawns every three weeks. This represents the optimum interval on a time-growth curve which I have worked out for this part of the country; the fourteen-inch mowing machine of the 1920 age-group has been carefully integrated to other variables. About a fortnight ago I was rushing downhill behind the machine, my eyes fixed on a luxuriant tuft of grass which I intended to cut as clean as a whistle. I allowed the blades to engage when I was about two yards from my objective, and with savage determination threw myself into the attack on the waving green spikes. A sudden crack, and I found myself staggering across the lawn gasping painfully for breath and rubbing my chest in the region of the second left costal cartilage where I had collided with one handle of the mower. I had forgotten that behind that innocent tuft of grass there lay hidden a small grid covering a drain ventilator. "Pooh!" I exclaimed, but the explosive was cut short by a stab of pain which made me hold my breath. I sat down gingerly on the lawn, lowering myself on extended arms, but the manœuvre ended in a groan. I would have sat longer, but there were unmistakable sensations indicating that the grass was not as dry as I had imagined. To immobilise the injured muscle I decided to raise myself using only my right arm. But seemingly the pectoral girdle never does things by halves, and I was conscious that it had gone into action even while I was at the stage of visualising the extent of the wet patch on the seat of my trousers. The next day was full of discoveries, including the one mentioned in my opening sentence. Fortunately there was little cause for the turbulent movements of the thoracic cage which are associated with laughter, and a suppressed cough was usually achieved by fixing the left side of the chest against the edge of a door. The sigh over the blackout was stillborn and the bedtime yawn hovered in midair. As for the night, it was made hideous with moans which synchronised with attempts to change my position in bed. Great though my discomfort was, I little realised that worse was in store. I was in the bus on my way to hospital. Suddenly I was aware that the awful thing was about to happen. It was too late to avert the impending catastrophe. I whipped out my handkerchief, being a faithful disciple of Bourdillon, and there followed a gigantic sneeze. The pains of hell got hold upon me and the explosion merged into an involuntary roar of anguish. The bus stopped. The driver's terrified face appeared at the hatch, anxiously seeking an explanation from the conductor. I have since thought that he must have been driving in a dream state, and on hearing the cry had leapt to the conclusion that he had run over a pedestrian. He was reassured by the young woman who was our conductor; amid a muttered chorus of disapproval from my startled fellow passengers she jerked her thumb in my direction. "It's 'im," she said simply. On arrival at the hospital my first call was at the radiological department. Sister, full of sympathy, offered to send the report to my ward as soon as the radiologist had reported on the film. An hour later it was handed to me in a sealed envelope. I opened it eagerly, impatient to learn how many ribs had been broken. My colleague had confined himself to a single word: NIL. "Pshaw!" I exclaimed, wincing with pain.

* * *

I was a very puzzling case. On Sunday I lost my appetite and felt off colour. Next afternoon I had a dull headache behind the eyes, which slowly got worse. On Tuesday evening I felt shivery and had a temperature of 100° F. Taking a couple of Veganin tablets and a stiff hot whisky I went to bed early, only to be awakened at 4 A.M. by persistent shivering in spite of piling all the garments I could find on my bed, and by 8 A.M. I felt so ill I decided to stay in bed. That evening I felt colder than ever in spite of numerous hot-water bottles and had an awful headache. My temperature had risen to 103°, my pulse to 130, and I had developed a sighing type of respiration at 36 a minute. I felt increasingly sick and was, the vomitus being dark brown and dirty and very acid to the mouth. I thought I was in for a bout of pneumonia and so did my physician, for he examined my chest five times. Even morphia that night failed to ease the intense headache and I barely slept at all, perspiring periodically. Thursday was even worse, although the headache was easier all morning. I was sick several times and kept up an irregular fever. I was now convinced that I had meningitis, but on pointing out to the physician that my eyes were tender if touched he rushed off to get his ophthalmoscope, when being a mere surgeon I now thought I had a retrobulbar neuritis. That night was just as bad. By Friday morning I was past caring. My mouth was thick and dry and my lips were coated with sticky mucus. Having no neck rigidity I now diagnosed myself as influenza with encephalitis. My physician was still in the dark, but he arrived with great glee to say that a blood-count showed a leucopenia; therefore I must have influenza, unless of course it was typhoid or one of that lot. He re-examined me and with a shout of triumph announced I had "rose spots" but still had no palpable spleen. Not having had my bowels opened throughout he ordered me an enema. I strained all day and by the evening felt a little better if somewhat exhausted. My headache was easier but my rash, which did not itch at all, had become diffuse all over my trunk and looked like scarlet fever. I had a very white tongue but no sore throat and the rash did not involve my head and neck or limbs. A blood-culture was taken that afternoon. On Saturday morning I felt better still and only had a temperature of 99°, though the rash and headache persisted. The pathologist announced he had grown a gram-negative bacillus, which was supposed to clinch the diagnosis of a septicæmia of the coli-typhoid group—but it struck me that a mere 14 hours' incubation in ox-bile medium with blood that had been immunised months previously with TABT made it sound unlikely. Otherwise I must have a considerable infection or very potent bacilli. My father, also a doctor, was certain I was a typical atypical (he is Irish) case of scarlet fever. By Saturday evening I had a dusky irregular macular rash on all my limbs—not at all like "rose spots" but rather like measles. However tired I was in the evening I became peculiarly alert by night and found it almost impossible to sleep. Saturday night was no exception and I did not sleep at all, though I managed about 1½ hours after breakfast on Sunday morning. During that day my headache left me entirely, as did the rash on my trunk, though on my limbs it remained until nightfall and itched. The margins of my eyelids felt sore and I felt a strange kind of stiffness, almost a cramp, in my calves and thighs if I moved my legs at all. That night, helped by 10 grains of Medinal and an extremely comfortable Sorbo mattress supplied by the American Red Cross, I had a full night's sleep for the first time. On the Monday I awoke refreshed and enjoyed the pathologist's report that all subcultures had died out. The final proof had failed. Some "friends" suggested it must be *Bact. suipestifer* or swine fever! Next day I was normal in every way and felt darned peckish, so that on the Wednesday I was allowed up for an hour. On the Thursday, Friday and following Monday the pathologist cultured my stools and urine and found no pathogenic organisms. I was discharged on the 13th day after taking to my bed and on the 15th day from my first symptom. Later my Widal reaction taken on the 22nd day from my first symptom gave a weak double positive result:

	O	H
Bact. typhosum	1/25	1/50
Bact. paratyphosum A ..	—	1/10
Bact. paratyphosum B ..	1/25	1/50

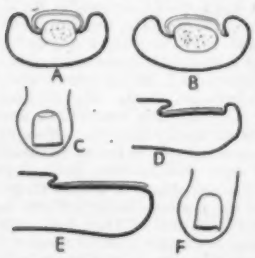
No prizes are offered for the correct solution.

Miss T. MONTAGNON, who died on Oct. 27 at the Westminster Hospital, had been an inspector for the Ministry of Health since 1920. She was one of the first trained nurses to be appointed to the staff of the ministry and had done much to help public-assistance authorities to maintain a high standard of care for the old people and children in their institutions.

Letters to the Editor

INGROWING TOENAIL

SIR,—Before any further suggestions are made as to the cause of ingrowing toenail it might be well to ascertain the true shape of the big toenail. It is a laborious job to collect facts of such apparently trivial importance, but anyone who cares to investigate will discover that in some cases—I have no idea whether the proportion is small or great—the normal shape of the nail is as in (*a*), while the ingrowing nail is really a nail which grows *out into* the nail wall (*b*). Apart from any question of abnormality of the nail shape we have to remember that many people habitually cut the nail too short (*c*), so that the soft tissues grow to a higher level than the free edge of the nail and form a distal pseudo-wall (*d*). A well-cut nail extends to the end of the toe (*e*) and prevents the formation of this pseudo-wall. Finally, mistakes are often made in the cutting of the nail. The correct shape is a straight line and not curved as in the case of the fingers. When a toenail is cut with a curve it is easy to miss the corner—probably owing to the lateral curvature. This results in a spike (*f*) which, as the nail continues to grow, perforates the distal pseudo-wall. The sequence—wound, infection, inflammation, septic ingrowing toenail—is obvious.



Manchester. W. SAYLE CREER.

LIGATION OF THE PATENT DUCTUS ARTERIOSUS

SIR,—In their paper of Oct. 18 Dr. Bourne and his colleagues mention that two dangers of a patent ductus arteriosus lie in the mechanical effect on the circulation and the local supervention of infection, and they consider that ligation of the duct should be adopted as a therapeutic measure for the latter complication. There seem to be grounds for doubting the importance of these asseverations. Persistence of the ductus arteriosus may exist as the sole abnormality in about a quarter of the cases, and it may then cause no inconvenience, for the right ventricle merely hypertrophies in order to deal with the increased volume inflowing through the patent channel as a result of the higher aortic pressure. The sum total of change therefore in this type of case is that right ventricular development equals or exceeds that of the left and may be accounted as a physiological response to increased work and unlikely to give rise to mechanical strain on the circulation. In the majority of cases however the condition is associated with other congenital abnormalities, usually of an obstructive type, in the pulmonary or aortic circuits, and its presence is then of the utmost importance in permitting the establishment of a functional readjustment of the abnormal blood-flow. In such instances it is obvious that ligation of the ductus arteriosus would constitute a grave threat to the compensatory collateral circulation, a danger which is not lessened by the fact that the detection of additional congenital abnormalities may be very difficult. Thus it may be seen, in connexion with the first case, that the continuous murmur of ductal origin was replaced later by a rough systolic one in the pulmonary area, thereby indicating the unsuspected co-existence of a stenotic lesion. No doubt the lesion was of a minor character, yet the operation was followed by a severe though fortunately temporary uræmia and the incident serves well enough to illustrate what may happen in a more complicated type of case.

The connexion between endocarditis and patent ductus arteriosus is undoubted. Nevertheless, it may be questioned whether ligation can have any good effect either preventively or curatively, as the underlying predisposition to infection must be based on the anomaly of anatomical structure rather than irregular circulatory flow and the operation will not alter that factor. As a curative measure the value of the operation is still more problematical, since the vegetations in general are not limited to the ductus and the underlying structural defect in the wall of the pulmonary artery is not remedied. Indeed, the only practical accomplishment achieved would be a reduction in the number of systemic emboli, if these were present, to the ill vantage of the pulmonary circuit which would thereby receive the full complement. Recovery from infective endocarditis is not unknown, even before the days of sulphonamide treatment, and there is no means of ascertaining in the two cases described whether the operation in any way influenced the course of the disease as both patients were afebrile and on the road to recovery before it was carried out. It may be that there is a case for ligation of the patent ductus arteriosus; if there is, it would not appear to lie in that class of patients, comprising the majority, associated with other congenital cardiac defects or in any after the onset of infection. In the remainder, a logical indication for ligation might be as a prophylactic measure; but, in view of the natural repugnance of the healthy person to undergo "ideal" operations, particularly major ones, it is possible that opportunities to assess its real value will be few.

London, S.W.3. J. H. MULVANY.

CALCIUM STUDIES IN NORMAL PEOPLE

SIR,—I have been reading Dr. Robertson's articles with great interest. He quotes figures from balance experiments conducted on normal subjects which showed that below a certain level of Ca intake the Ca output was restricted—i.e., the Ca was used more economically. In the cases he quotes, the subjects had been on the low Ca intake for only short periods. We found the same in indigent subjects who had been on a low Ca intake for long periods (Owen, E. C., Irving, J. D. and Lyall, A. *Acta. med. scand.* 1940, **103**, 235). So efficient had the utilisation of Ca by these subjects become, that some of them were in equilibrium on intakes as low as 0·25 g. Ca per day. It would appear from this and other work (i.e., Rottensten, K. V. *Biochem. J.* 1938, **32**, 1285) that one cannot define a *normal* level of Ca intake in this way since the requirements for equilibrium will depend solely on the Ca reserves of the individual under test, and these in their turn depend on the previous dietary Ca history. This has recently been stressed by Steggerda and Mitchell (*J. Nutrit.* 1941, **21**, 577). Thus it has been found that Chinese (Kung, L. C. and Yeh, H. L. *Chin. J. Physiol.* 1937, **12**, 139) and negroes (Kelly, F. C. and Henderson, J. M. *J. Hyg. Camb.* 1930, **29**, 418) appear to have a lower requirement for Ca than do white people. This lower requirement is certainly not racial in origin but is due to the fact that these peoples habitually subsist at lower levels of Ca intake (Kung and Yeh). It therefore seems to me that one cannot quote figures for normal Ca requirements on the basis of balance experiments since the requirement for equilibrium depends entirely on the previous dietary history of the individual. The only assessment of adequate Ca intake must be an empirical one—one which keeps the individual in optimal health.

J. T. IRVING.

Department of Physiology, University of Cape Town.

"WAR-TIME HEALTH AND DEMOCRACY"

SIR,—May I take up two points in your generous review of my small book in THE LANCET of Nov. 1? Lord Hewart's definition of democracy is "a system of government based on the Rule of Law and the Sovereignty of Parliament": your reviewer has telescoped the sentence in my book which gave this definition, and the result is hardly fair to the distinguished author of "The New Despotism." Your reviewer gives one or two selected quotations to support his argument that I have "a somewhat introverted view of the doctor as a democrat." Two more quotations, if you will allow me to give them, cast doubt on your reviewer's interpretation: "My own opinion is that . . . the doctor, *in relation to his professional work*, should steer clear of politics." (Italics mine.) "And the individual doctor can always express his political views as a *private citizen* with the right to vote for his man in a free country." (Italics mine again.)

London, W.C.1. HUGH CLEGG.

PLUMP TYPE OF GRAVES'S DISEASE

SIR,—In commenting on our paper of Sept. 20 Mr. Keynes makes the rather surprising statement that "it is dangerous to make any attempt to separate off any particular category [of Graves's disease] as being fundamentally different from the rest." Mr. Rundle in your issue of Oct. 25 appears to support this view. The cases we described had one distinctive character uncommon in Graves's disease—a tendency to increase in weight while still untreated and actively thyrotoxic. In addition they were all young women of about the same age with an unusual degree of lymphatic hypertrophy even for Graves's disease, and five out of eight had amenorrhœa. It seemed to us that these cases formed a distinctive group, though we admitted the existence of transitional types, and we suggested that they were displaying an unusual resistance to the thyrotoxic process. Since the results of thyroidectomy had not been so satisfactory as we had come to expect in the usual type of Graves's disease, we ventured to suggest that in such cases conservative treatment might be given a trial. We presume that it is this mild suggestion which has so alarmed Mr. Keynes.

Mr. Keynes has also made much of the two deaths in this group. We did not of course draw any far-reaching conclusions from these deaths; they were never a major point in our discussion on this group, and it will not surprise us if further experience shows the mortality to be not unduly high. None of the surviving cases, however, could be classed as good results, and three of them were early recurrences.

Later Mr. Keynes himself braves the dangers of subdivision sufficiently to admit the existence of "atypical" categories of Graves's disease, among which he classes the plump type. This surely is an odd method of classification, for he presumably groups together all cases which happen to lack one or more of the chief characters of the disease. We can see little in common, for instance, between the plump type (which are severe and outspoken examples of Graves's disease in young women) and the type common in the elderly in which auricular fibrillation is the only prominent feature of the disease. Yet Mr. Keynes would apparently class these groups together as "atypical" categories. Of this oddly assorted group, Mr. Keynes says that "there is room for judgment in forming an opinion for or against operation" because the results of thyroidectomy are less dramatic than in the classical type. Whether this is a correct statement of the prognosis of this remarkable hotch-potch it is impossible to say; but the statement is interesting as revealing that even Mr. Keynes considers the results of thyroidectomy to be not always exactly predictable. If this is so, is it so very dangerous to inquire whether there are not in fact different types of the disease, which may respond characteristically to treatment?

To avoid further confusion, the conclusions arrived at in our paper were the result of careful observation over a number of years of a series of cases of Graves's disease, operated on by the senior surgical staff at a general hospital. Mr. Rundle's reference to "a surgeon's early efforts at thyroidectomy" is therefore irrelevant.

W. R. TROTTER.
Leavesden. K. C. EDEN.

GRADUATION AT AN EARLIER AGE

SIR,—Many will agree with Dr. Spencer Paterson, who pleads for graduation at an earlier age in your issue of Oct. 25, when he states that the years from sixteen to eighteen are not very usefully employed. But surely the chief reasons are not, as he suggests, that students are either learning subjects which they must later re-learn at the university, or are learning classics; because, at the age of seventeen, the great majority are already working for their first M.B. Rather these years are not usefully employed because the work must conform strictly to a university syllabus which demands an unnecessary amount of detail, and does nothing to encourage a general or scientific background. Added to this, in many cases, are the unnatural restrictions to freedom and independence imposed at this stage by the public-school system.

To justify his plea Dr. Paterson also referred to the undesirability of late marriages and small families among the medical profession. This is found in the professional classes as a whole, and the reasons are largely economic. For this the state is responsible, and the state must find the cure, not the university or the medical authorities to whom the plea was directed. And let us note that the one state that has tackled this problem provides medical men, even in their student days, with an adequate salary. I cannot help feeling that the moral breakdowns in medical students which Dr. Paterson is apparently called on to treat may be due not so much to frustration with the medical curriculum, as to the realisation that at the age of twenty-one they are still, and for the next few years will remain, just as dependent on their parents for their every need as they always have been.

I submit, Sir, that our efforts would be better directed towards changes in the medical curriculum, and in the status of the young doctor, than towards graduation at an earlier age. Superficially this suggestion may appear as a panacea for the ills to which Dr. Paterson so rightly pointed. But perusal of your number (Aug. 30) devoted to medical education will show that in this country graduation probably takes place already at an earlier age than in any country in the world with the exception of Nazi Germany.

Watford. J. A. V. BATES,
Final-year student.

THE HEN AS MIDDLEMAN

SIR,—I welcome the criticism that appeared in your issue of Oct. 25 (p. 487) on my article in *Nature*, although the suggestion that, being an authority on poultry, I naturally defended the animal of my choice from the obloquy cast on it by agriculturists and dietitians is not too happily phrased, since the casual reader may assume that I wrote the article from reasons of self-interest rather than from the point of view of the welfare of the nation. In my article I contended that, on dietetic grounds, the egg is just as essential an article of diet as milk, and that, from the point of view of economy of conversion of feeding-stuff protein to human food protein, the hen has a claim to priority second only to the dairy cow. I assume that this dietetic part of my contention is accepted. But you attempt to destroy my case for the hen on economic grounds. Not being an economist I am at a disadvantage, but even to my amateur mind the arguments adduced appear a little unsound. To base an argument on the relative price the Government is prepared to pay for the protein in eggs and milk in these days of price regulation, and to argue that such prices reflect the relative efficiencies of the dairy cow and the hen to produce such protein is surely illogical, apart from the fact that I have never suggested that egg production should be encouraged at the expense of milk production. The present prices paid to the producer by the Government are admittedly fixed in relation to cost of production, but such costs cover many other factors than that of relative efficiency of food conversion. The relatively high prices paid for eggs are essentially due to the fact that Government action has resulted in poultry producers having to cut their flocks below the normal economic level, whereas no such action has been enforced in the case of the dairy farmer. The price argument works both ways. Following the same line of argument I could with equal justice maintain that the Government, by asking the consumer to pay 2½*d.* for an egg containing 6–7 g. of first-class protein, as compared with a pint of milk at 4½*d.* containing 18 g., is of the opinion that egg protein is much more valuable to the consumer, weight for weight, than milk protein.

The contention that the hen, being a much smaller animal than the dairy cow, requires much more energy for maintenance than the dairy cow, weight for weight, is an accepted fact, but even here there is a possible fallacy in the argument, since the relative cost of maintenance, when charged against the finished product, will vary according to the relative amounts of the finished product produced. It is of interest to note that a 5 lb. hen laying 140 eggs a year produces 78% of her body-weight in the form of dry human food (not counting shell), whereas the 1250 lb. cow giving 600 gallons of milk produces only 59% of her body-weight in the form of dry human food. Finally, although the energy requirement for maintenance is correlated with body surface rather

than body-weight, such is not the case with protein. There is, consequently, no reason to assume that a small animal is less efficient as a converter of protein than a large animal.

I am not convinced that the reasoning in my *Nature* article is at fault. If need for protein is of primary importance to the nation, then the hen deserves first consideration next to the dairy cow. If, on the other hand, energy requirement is the primary need, then the pig should rank next to the dairy cow.

Animal Nutrition Institute, Cambridge. E. T. HALNAN.

CANCER AND OILING OF FLOORS

SIR,—As the suggested method of oiling floors has, I think, been in use at certain schools for very many years, without any detriment to the health of a few generations, it would appear that the method is harmless. One is thankful for assurance on the new suggestion of oiling blankets.

Market Drayton. PETER W. EDWARDS.

PROPHYLAXIS AND TREATMENT OF COLDS

SIR,—In his article of Nov. 1 (p. 534) Dr. Thrower mentions experments carried out for controlling colds by ultraviolet light and states that the results were disappointing. This is by no means the experience of observers who have used ultraviolet irradiation for many years in this and other countries. The common cold can be aborted in a large percentage of cases if proper technique is adopted and suitable apparatus is used. The nostrils and pharynx can be sterilised by application of ultraviolet rays by means of quartz applicators attached to the Kromayer mercury-vapour lamp first used in Berlin in 1903. This treatment should be combined with infrared irradiation applied over the antra and general U.V. irradiation to increase the bactericidal power of the blood-stream. Apparatus has unfortunately not been standardised in this country, the result being that innumerable pieces of apparatus now in use have but little therapeutic effect. In addition the technique adopted to carry out experimental investigations is often faulty.

Wimpole Street, W.1. W. ANNANDALE TROUP.

TOWARDS A NATIONAL SERVICE IN CLINICAL PATHOLOGY

SIR,—After reading Dr. Dyke's article of Oct. 25 doctors in general will be looking forward to the time when the scheme envisaged will have become an integral part of the practice of medicine in this country. It may, however, be of interest to Dr. Dyke and others to know that a comprehensive pathological service very much on the lines indicated has been functioning in at least one part of the country for many years, and that consequently one or two statements in this excellent article are not strictly correct.

More than a quarter of a century ago the Kent county council established a laboratory for carrying out public-health pathology. It soon became evident, however, that the line of demarcation between public-health pathology and clinical pathology was very indistinct, and it seemed desirable to extend the service to provide facilities for undertaking pathological work for all doctors practising in the county. The development of the scheme was very rapid, and even before the war nearly 100,000 specimens were being examined annually; about 30,000 in the six branch laboratories at the county hospitals and institutions and the remainder at the central laboratory at Maidstone. Briefly, the scheme as it operates at present is that medical officers of health, general practitioners and the medical staff of hospitals in the county which have no pathologist on the staff may send into the main laboratory an unlimited number of specimens for examination. Field work for the purpose of investigating and controlling the spread of epidemic disease is undertaken by the pathologists in collaboration with the district medical officers of health. In the case of patients residing within a reasonable distance of Maidstone, and who are able to travel, the doctors may wish to have specimens collected in the laboratory; in some cases, of course, this is necessary, and is greatly appreciated when such investigations as glucose-tolerance curves and urea-clearance tests are required. Furthermore, the services of pathologists are available to assist in consultation with doctors in the investigation of clinical problems at the bedside of their patients. These services are entirely free of charge to the doctor and the patient; outfits for the transmission of specimens are also supplied free, and the only expense incurred is that of sending the specimens to the laboratory. The cost of the laboratory is a charge on the county rate and is relatively small for the services provided.

It is not claimed that this pathological service is by any means ideal, and plans for future developments along present lines have been made; but that there is ample need for such a service is evidenced by the general appreciation expressed of the value of the provisions already made in this county.

Maidstone. CONSTANT PONDER.

FIRST-AID IN WAR-TIME

SIR,—I was interested to read Dr. Hodgson's letter in your issue of Oct. 25. During the past year the Halifax casualty services have been instructed with special reference to: shock; hæmorrhage; wounds; burns; certain fractures; war-time neuroses; the speedy evacuation of casualties; the diagnosis as between F.A. post and hospital casualties; and the movement, parking and spacing of casualty vehicles. In addition, a thorough knowledge of local geography (helped by night exercises) is part of their curriculum. We have cut out all elaborate bandaging and splinting at incidents. Tourniquet dangers are stressed. I am of the opinion that a simple textbook on war-time first-aid would be appreciated by the casualty services.

G. C. F. ROE,
Medical Officer of Health, Halifax.

Q CAMP

SIR,—In your review of W. D. Wills's book "The Hawkspur Experiment" (Oct. 18, p. 474) the principles on which the Q Camp was run are summarised in a way which shows a deep understanding of our work, but there is one correction I should like to make. The numbers never reached 70, nor could we have carried on the methods with so many at a time. We considered about 30 to be a desirable maximum, although had the demand been pressing we might have been willing to exceed this, but certainly not to go beyond 50. This does not imply that Q Camp methods are unsuitable for such institutions as Borstals or prisons, where large groups are at present the rule. Rather does it mean that large groups are unsuitable for the reformative work they aim to do. The combination of individual study and individual help with experiments in community living, which seems to be the lines most hopeful for the re-education of offenders, requires that these larger groups be subdivided.

MARJORIE E. FRANKLIN,
Oxford. Hon. Secretary, Q Camps.

HOME GUARD TERMINOLOGY

SIR,—We are discussing what title should be given to the minor aid-posts set up by the Home Guard and provided by the authorities with a minimal equipment. I am told that in one area these posts, which do not differ in any essential, are to have no less than three sets of initials according to whether they are associated with battalion headquarters, companies or platoons. The initials proposed are H.G. B.A.P., H.G. C.A.P. and H.G. P.A.P. The prefix H.G. is necessary because the army authorities already use C.A.P. and P.A.P., as was pointed out by one of your correspondents.

Surely it is time that we called a halt to this multiplicity of initials and gave first place to brevity and accurate description. Our Home Guard posts would be called points by the civil authority and by this term they intend to signify that the amount of assistance which can there be given is very much less than that provided at any post. The word point is not felicitous because the initial "P" may equally stand for post or party but it does at least indicate an important distinction which is missed by those who would use the expression aid-post for every sort of place at which medical attention is available. I must admit considerable sympathy with those who use the expression C.C.P. (casualty collecting post) as both descriptive and distinguishing for all Home Guard posts and would venture to hope that official authority may be given for the use of this term before a riot of uneasy nomenclature submerges us.

BATTALION M.O.

WAR-TIME NURSERIES DISCUSSED

A STRANGE situation has arisen: everyone agrees that if women are to go into industry in large numbers their children below school age must be cared for, preferably in nursery schools and day nurseries; the Government has endorsed this view so strongly that local authorities can claim the entire cost of starting nurseries; and yet, after two years of war, there are at present only 103 day nurseries in the whole country, receiving between them barely 6000 children—and there are more children than that between 2 and 5 in many a county borough. Reasons for this curious inertia were discussed at a conference on Oct. 29, arranged for London and the Home Counties by the Nursery School Association of Great Britain and the National Society of Day Nurseries, with Lord Horder presiding. Administrative control has been given to the Ministry of Health; and, though approval of every new scheme for a nursery must be obtained from the Board of Education as well as the Ministry, power to give such approval has been delegated to the senior regional officers and to inspectors of schools, and arrangements have been made so that both approvals can be obtained at the same time. Difficulties in finding premises, staff and equipment are the chief delaying factors, but there are also wide divergencies in the enthusiasm with which local authorities approach the idea of establishing nurseries.

Mr. J. C. WRIGLEY (Ministry of Health) reminded the conference that in the early days of the war the need for nursery schools or residential nurseries had been mainly in the reception areas; now the need was chiefly in centres of industry where women were being increasingly employed. He suggested that whenever a nursery was planned local authorities should draw up a time-table fixing the dates on which the nursery should be approved, equipped and opened, and should make someone responsible for seeing that this time-table was kept. This dovetailed with a suggestion from Lady ALLEN OF HURTWOOD, one of the chief movers of the conference, that the Ministry of Health should appoint some dynamic person to apply ministerial policy and coördinate the departments, authorities and groups concerned with the needs of the young child. She felt that nurseries for babies under 2 should be established only with the greatest reluctance. She was doubtless thinking of the dangers of infection, so great among children of this age when they are gathered together; it is well to hesitate, especially if they are to be housed in the same nurseries as the 2–5 group. On the other hand it is not feasible to establish separate nurseries for those under 2. The mother with a sizeable family cannot be expected to get the bigger ones ready for school and then go round disposing of the younger ones at two different nurseries before she goes to work at 8 o'clock. Miss FLORENCE HORSBRUGH, parliamentary secretary to the Ministry of Health, said that in the ordinary way it was questionable whether the mothers with babies under 2 should be going to work at all, but just now mothers could look after their children best by making munitions to defend them. But she was not wedded to the notion that the only way to get the children looked after was in nurseries. A nursery, she pointed out, would take about 40 children; if something like 400,000 women with children under 5 were going into industry during the next few months we should need 10,000 nurseries straight away. It was impracticable to establish them on that scale, and she felt we must call upon a home guard of women—grannies and aunts—to do some of the minding while the younger women went into the factories. This laid Miss Horsbrugh open to the charge of being "minder-minded." Many people feel that there are strong objections, in the usual way, to this haphazard method of child care, and that nurture is best ensured in the nursery school. Yet it is doubtful whether finality lies on either side of this fence; MARGUERITE DOBBING, in a letter in the *New Statesman* of Nov. 1, tells of her own complete conversion from one opinion to the opposite after working in an evacuated residential nursery school for 21 months. The children there in spite of expert care seem to be going backward instead of forward, reverting to thumbsucking and temper displays; and this is due, she thinks, to lack of personal love. The aunt and granny could possibly achieve more in this direction than the best nursery school, however far they fell short in other ways.

This was borne out to some extent by the remarks of Miss ANNA FREUD at the conference. Nursery schools, she said, had never been meant as a substitute for the home, any more than the welfare clinics did away with the need for the mother's care, or child-guidance clinics with the need for education by the parents. All these services were simply extensions of the home. At present, however, families are dissolved, homes hardly recognisable and children scattered in billets. The nursery schools are confronted with the task of filling all the gaps, and they have done their best. But the mother-child relationship is normally a 24-hour affair, and the child who goes back and forth between home and nursery may in the end feel a stranger in both. Miss Freud believed in making every possible effort to include the real mothers in the life of the nursery. Some people, she felt, looked on love from the parents as a luxury which a child could not expect to get in war-time. In the last war the same remark was applied to things like sugar, fresh fruit and butter, of which continental children were deprived; these were now recognised as necessities. Today psychologists knew that there were some types of maladjustment in later life which were rooted in the lack of an ordinary home life in the first five years.

THE RIGHT STAFF

Miss FREDA HAWTREY made constructive proposals for dealing with the time lag in the development of nurseries due to lack of staff. The two types of women called on to fill responsible posts, as she pointed out, are hospital nurses and nursery school teachers. They have had totally different types of training and are therefore good at different things. Thus the nurse is (regrettably) used to residence and long hours. She is accustomed to handling babies under 2, to routine, to preventive measures against infection, and to detecting signs of illness early; but she has usually dealt more with sick children than healthy ones. The nursery school teacher is used to handling large groups of young children, believes more in free activity than routine, and has her attention focused on health; but she takes no responsibility for children under 2. Thus a hospital nurse is more suited for charge of a nursery which admits children of all ages under 5 and a nursery school teacher for a nursery which takes children between 2 and 5. In all nurseries where there are more than 20 children between the ages of 2 and 5 a nursery school teacher can be added to the staff; but coöperation between the nurse in charge and the teacher is not always easy. To overcome this difficulty, induced by the differences in training, courses in child management are being arranged for nurses, Miss Hawtrey said, by the Royal College of Nursing and for nursery school teachers by the Board of Education. The audience did not rise as one woman—as might have been expected—and say "But why not courses for both together?" Surely no better opportunity could be wished for establishing an understanding between the two groups of workers; and clever teachers should be able to help each student to merge her professional bias in the aims of the job she is going to do.

Miss Hawtrey suggested that the few available trained women—whether nurses or teachers—should be put into the key posts, and that the minor posts should be filled by "nursery nurses" trained to look after children in private families, by auxiliary nursery assistants who might be recruited from among young mothers, nannies, friendly aliens and elderly women. These could register with the Women's Voluntary Service and take a short training course with the Child Care Reserve. She would like to see emergency training centres started in connexion with existing nurseries, and estimated that if 24 students each took a 6 weeks' course, one centre could provide nearly 200 nursery assistants in a year.

PAYMENT FOR CARE

The cost to the mother of leaving her child at a day nursery was not discussed at the meeting, but this may well have an important bearing on the extent to which the nurseries are used when they are set up. The standard charge suggested by the Ministry is 1*s.* a day for each child and though this is little enough in return for all the child enjoys it is a formidable sum for a woman who happens to be working 7 days a week in return for a wage ranging from £1 18*s.* to £2 10*s.* a week. Cases of hard-

ship can be considered and if necessary the payment can be reduced ; but women in industry might well be granted this relief free of charge. It would pay well as a national investment in healthy child life.

Obituary

RALPH MORTON CALDER

M.B. GLASG. ; SURGEON LIEUTENANT, R.N.V.R.

THE death has been reported of Surgeon Lieutenant Ralph Calder, who was posted as "missing presumed killed" last August. He was born in 1913, the only child of Mrs. Janet Calder of Ayr, and educated at the Academy there. He graduated M.B. with commendation from Glasgow University in 1935. He held house-appointments at Ayr County Hospital and the Glasgow Royal Hospital for Sick Children, and he was Prof. T. K. Munro's last house-physician at the Glasgow Western Infirmary before his retirement. It was during this time that Calder first showed his aptitude for experimental work, though his one great desire was to be a physician. But he was persuaded for a time at least to study pathology, and after two voyages as ship's surgeon he was awarded in 1936 an M.R.C. scholarship in experimental pathology. He chose as his subject liver necrosis and cirrhosis and began work at the infirmary under Professor Blacklock, who has written of him :

"Calder was a stimulating laboratory colleague. He approached any difficult pathological problem with a critical mind, but his criticism was always constructive and he dearly loved planning experiments to solve it. These experiments, as his work on the liver proves, were always logical and were planned to have a bearing on the elucidation of disease in the human subject. He did not neglect the purely morbid anatomical side of pathology and in the little teaching which he did he could draw an admiring group of students around him while he explained the nature of the lesions present. Then from his clinical knowledge he would correlate in a most lucid manner the postmortem and clinical findings. His academic accomplishments were great for one of his years, yet he was always modest and helpful towards his less gifted brothers and respectful of his seniors, who foresaw a great career in store for him and by whom he will be greatly missed."

In 1938 Calder was awarded a Graham scholarship and he came to London to continue his work on the liver under Professor Cameron at University College. He later submitted the results of these investigations as his M.D. thesis. He had joined the R.N.V.R. at the beginning of 1938 and he was called up before the outbreak of war. For a year he carried out the routine work of a medical officer attached to a general hospital, till he was detailed to specialised research work. At his own request he was later posted to a ship and on this service met his death. His published work included a report of a case of cold allergy and a study of autoplastic splenic grafts. His opinions were clear and his criticisms penetrating, but if he had forthrightness he also had charm, and his friends will remember him as an interesting and stimulating companion with a wide knowledge of literature and a deep love for the music of Mozart and Handel.

GEORGE ALEXANDER COHEN

M.B. EDIN.

MANY who attended the court of the coroner for Eastern Middlesex during the last fifteen years will regret the death of Dr. George Cohen on Oct. 16 at the age of 71. Dr. Cohen who was born in Hull qualified in 1893 at Edinburgh University, and after postgraduate study at St. Bartholomew's and Dublin, he saw a good deal of service abroad as a ship's surgeon. He set up in general practice at Harringay in 1906 but forensic medicine was his real bent. He was called to the bar by the Middle Temple and in 1910 appointed coroner for the then central Middlesex district. In 1926 Mr. A. M. M. Forbes, coroner for the eastern division of the county, died, and the eastern division absorbed the central under Dr. Cohen. After the Coroner's (Amendment) Act 1926 became law, his jurisdiction was further widened by the accretion of the parishes of Edmonton, Southgate and Enfield. In his younger days he was a noted instructor in ambulance work and a captain in the Volunteer Brigade of the Middlesex Regiment. For over six years he represented the Tottenham-Harringay Division on the Middlesex county council, but he resigned on his appointment as coroner.

ROBERT WALLACE NESBITT

M.B. DUBL., F.R.C.P.I. ; SURGEON COMMANDER, R.N.

Commander Robert Nesbitt, who lost his life through enemy action in September, began his medical career in 1912, when he entered Trinity College, Dublin, with distinction as a junior exhibitioner—a standard he maintained throughout his student days. In 1915 he joined the R.A.M.C. as a private, but was sent back the same year to complete his medical studies. He qualified L.Med. as quickly as possible and in 1918 joined the Navy as a temporary surgeon. After the war he elected to stay in the service, returning to Dublin to take his M.B. degree in 1923. He had a distinguished service record, holding the appointment of medical specialist at Haslar, Plymouth and Chatham. Much of his leisure was spent on postgraduate work and a careful study of the literature of his special interest—diseases of the chest. But he found time to write several plays, one of which was acted by the Dublin Abbey Theatre. He loved a good argument, and his friends enjoyed the charm, humour and eloquence with which he disposed of their points. A well-turned phrase or subtly expressed thought gave him intense pleasure, for he had the gentleness, sympathy and understanding of a poet.

Births, Marriages and Deaths

BIRTHS

BARBER.—On Oct. 30, at Dunmow, the wife of Dr. Geoffrey Barber—a son.

CALVERT.—On Oct. 31, at Barrington, Cambs, the wife of Dr. Henry Calvert—a daughter.

CAREY.—On Oct. 31, at Sherborne, Dorset, the wife of Surgeon Lieutenant Fraser Carey, R.N.V.R.—a son.

DAWSON.—On Oct. 22, at Oxford, the wife of Major J. R. Dawson, R.A.M.C.—a daughter.

GRANT.—On Oct. 30, at Farnham, the wife of Captain Russell Grant, R.A.M.C.—a son.

HELLIER.—On Oct. 21, the wife of Dr. F. F. Hellier, of Park Square, Leeds—a son.

RICHARDS.—On Oct. 30, at Sutton, the wife of Captain A. H. Mordaunt Richards, R.A.M.C.—a son.

SIDEY.—On Oct. 31, at Aberdeen, the wife of Surgeon Lieutenant J. D. Sidey, R.N.V.R.—a daughter.

DEATHS

COLLIE.—On Oct. 27, at Bournemouth, Frank Lang Collie, M.D. Aberd., aged 77.

MARTLEY.—On Nov. 2, Francis Charles Martley, M.D. Camb., F.R.C.P.I., D.P.H.

PENFOLD.—On Oct. 27, at Melbourne, William James Penfold, M.B. Edin., B.Hy. Durh., D.P.H., director of the Baker and Shaw Institute, Alfred Hospital, Melbourne.

PICTON PHILLIPS.—On Oct. 29, William Edward Picton Phillips, M.R.C.S., of Egerton Gardens, S.W.3.

TIDEY.—On Oct. 29, at Winchester, Stuart Alexander Tidey, M.D. Lond., M.R.C.P., aged 84.

WALKER.—On Oct. 30, at Guildford, John Morris Walker, M.B. Glasg.

WATSON.—On Oct. 25, Thomas Boswall Watson, M.D. Edin. late of Woldingham, Surrey.

WATSON.—On Nov. 1, Henry Allan Watson, M.B. Glasg., of Worcester, aged 70.

AMERICAN DOCTORS FOR BRITAIN.—Up to Sept. 4 the number of doctors in the United States who had applied to enrol in the R.A.M.C. was 230 (*J. Amer. med. Ass.* Sept. 13, 1941, p. 941). Of these 138 were unsuitable for various reasons ; 42 of the remainder had actually received passports.

Medical News

Royal College of Physicians of London

At a meeting of the college held on Oct. 30, with Sir Charles Wilson, the president, in the chair, Sir Wilson Jameson, Dr. J. C. Spence and Dr. W. A. Daley were elected councillors. The following were re-elected representatives of the college: Sir Adolphe Abrahams on the committee of management of the conjoint board; Sir Comyns Berkeley on the council of the Central Midwives Board; Dr. John Hay on the court of governors of Liverpool University; and Sir Stanley Woodwark on the Central Council for District Nursing. Dr. Cyril Elgood was elected a member of the library committee.

The president announced the appointment of Sir Wilson Jameson as Harveian orator, and Surgeon Captain Macdonald Critchley as Bradshaw Lecturer for 1942; and the award of the Jenks scholarship to Terence Robert Lancelot Finnegan, late of Epsom College.

The following having satisfied the censors' board were elected members:—

Margaret D. Baber, M.D. Lond., W. W. Brigden, M.B. Camb., H. A. Burt, M.B. Camb., D. L. Caldwell, M.B. Camb., G. W. M. Findlay, M.D. Edin., G. M. FitzGerald, M.B., N.U.I., Geoffrey Flavell, F.R.C.S., G. S. Graveson, M.B. Camb., Ursula James, M.B. Lond., Joseph Marks, M.B. Lond., Thomas Parkinson, M.D. Lond., F. T. G. Prunty, M.B. Camb., and I. B. Sneddon, M.B. Sheff., surgeon lieutenant, R.N.V.R.

Licences to practise were conferred upon the following 159 candidates (138 men and 21 women) who have passed the final examination of the conjoint board:—

Hazley Anderson, R. H. Andrews, I. J. Anrep, C. D. Baker, Hazem Barrada, Edward Barry-Smith, A. W. Bauer, Peter Baxter, Heinrich Beck, Marcel Bednar, C. J. A. Bell, J. A. R. Bickford, Margaret A. Billinghurst, D. A. Blacketer-Simmonds, Joseph Borrowdale, D. S. Boyle, S. Y. Brookes, Jean L. Broughton, R. J. D. Browne, C. J. Bruhn, J. D. Bruzaud, Olive N. Bywaters, D. A. K. Carnegie, D. W. F. Charlton, W. H. Chase, J. P. Childs, N. F. Clarke, B. U. Coffey, H. I. Coombs, R. A. Craig, A. F. Crick, M. C. Cross, F. X. Darné, R. G. Dewhurst, L. W. D. Drabble, F. M. P. Eckstein, J. R. Ellis, Shifra Ernst, A. T. G. Evans, A. J. Evans, E. J. S. Evans, J. W. G. Evans, J. H. W. Fagan, T. N. Fison, J. M. Fitton, A. W. H. Foxell, Beryl M. Givan, E. C. E. Golden, Gertrude Goldscheider, J. G. Goodhart, A. J. R. Gottfried, J. D. C. Gowans, K. G. Green, B. P. Griffin, H. J. Hagger, C. L. Hall, Doris N. Hall, Constance M. Hallett, J. H. G. Halliday, Penelope K. Hammick, B. E. F. Hammond, P. A. S. Hargrove, Charles Harris, R. J. Harvey, Thomas Haw, Ursula M. Hickman, A. W. Hind, S. J. Hinds, W. K. G. H. L. Hoffmann, A. E. Howarth, D. R. Hughes, Isabella C. F. Hungerford, Menahem Icht, E. B. Jarrett, Rees Jenkins, C. H. Jones, D. G. Jones, K. C. D. Jones, Samuel Jung, F. L. King-Lewis, F. M. Lancaster, Richard Leigh, K. H. Lim, W. K. Lim, Jeffrey Lomas, J. D. B. Longley, Helen C. Longmore, Morris Lustigman, Osias Lustmann, P. M. McAllen, Hugh McColl, Gerald Machanik, L. R. McLaren, T. M. M. McLean, H. L. McMullen, George MacVicar, Mary B. Maish, Betty M. Margetts, Giusto Mariani, H. E. S. Marshall, S. M. Ma'tuk, C. H. Merry, J. E. Moore, J. E. E. Morgan, P. J. L. Mumford, J. W. Nelson, R. J. Newman, G. D. R. Patten, Jean W. Paul, Alfred Pearce, B. O. Pepper, R. K. Phillips, W. A. Porter, Elvira Power, T. M. Pritchard, J. P. Quilliam, J. F. P. Quinton, R. J. W. Rees, Edith Rhodes, J. W. F. Richardson, H. A. Ripman, J. T. Robinson, W. G. Roper, Israel Rosen, C. F. Ross, R. K. Ross, Hynek Rotenstein, D. T. Rowlands, D. K. Sambrook, Walter Schiller, G. C. Schwizer, H. P. Scurlock, C. F. Scurr, A. G. Seaman, J. P. Sharp, A. L. H. Smith, B. J. Smith, A. J. M. Stevenson, Maximilian Stinay, J. H. Tasker, H. D. Teare, D. I. Thomas, R. D. St. G. Tucker, K. O. A. Vickery, D. G. Vulliamy, Ellis Vure, G. H. Waddington, Glenys J. Wade, Vera B. Walker, G. G. Wallis, D. P. Walther, C. W. Walton, G. N. Weber, Joan M. Whiteman, David Williams, E. J. Williams, M. H. C. Williams, D. H. Wright, and E. J. Young-Thompson.

Diplomas in child health were granted, jointly with the Royal College of Surgeons, to the candidates named in our issue of Oct. 18 (p. 473), and diplomas in public health to L. C. Lodha, L. G. Norman and M. A. G. Ward.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council of the college held on Oct. 25, with Prof. W. Fletcher Shaw, the president, in the chair, the following were admitted to the membership:—

Gavin Boyd, Glasgow; Edward Gledhill, Batley; R. M. Millen, London; Constance E. Peaker, Leeds; Kathleen M. Robinson, London; Katharine C. Rogers, London; R. X. Sands, London; Violet E. A. Sykes, London; and George Wynn-Williams, London.

The following have satisfied the examiners for the diploma:

Elizabeth G. W. Barker, Constance L. Beynon, L. A. Cruttenden, Dorothy Cunningham, R. G. Denniss, A. A. Fyffe, R. P. Gammie, Jean L. Hallum, L. W. Heffernan, Geoffrey Hollingsworth, Hilda E. McNamara, P. S. Norris, Jean F. Thompson, H. B. Watson, Eva M. M. Willett, and H. G. Wolskel.

Association of Anæsthetists of Great Britain and Ireland

The following have been elected officers of this society for the coming year: president, Lieut.-Colonel Ashley Daly, R.A.M.C; vice-president, Dr. C. F. Hadfield; treasurer, Dr. Z. Mennell; and secretary, Dr. A. D. Marston.

National University of Ireland

The Dr. Coffey travelling studentship in physiology has been awarded to Dr. J. W. Harman and the bursary in medicine to Dr. John McSorley.

North Western Tuberculosis Society

A meeting of this society will be held on Thursday, Nov. 13, at 3 P.M., at 352, Oxford Road, Manchester. Dr. G. H. Leigh, the president, will speak on facts and fancies and the tuberculosis death-rate.

British Institute of Philosophy

On Friday, Nov. 14, at 3 P.M., Prof. Herbert Dingle, D.Sc., will speak at University Hall, 14 Gordon Square, London, W.C.1, on the universe in relation to modern physics. Cards of admission may be obtained from the director of studies at University Hall.

Royal Institution

On Tuesdays, Nov. 25, Dec. 2, 9 and 16, at 2.30 P.M. Prof. J. C. Drummond, D.Sc., will lecture on recent advances in the science of nutrition and their significance in war-time. The meetings will be held at the institution, 2, Albemarle Street, London, W.1.

Pharmaceutical Society of Great Britain

A meeting of this society will be held at 17, Bloomsbury Square, London, W.C.1, on Thursday, Nov. 13, at 2.30 P.M., when the Hanbury medal will be presented to Mr. Harold King, F.R.S., a member of the staff of the National Institute for Medical Research. Dr. King will afterwards speak on chemistry and pharmacy.

Royal Society of Medicine

On Tuesday, Nov. 11, at 2.30 P.M., there will be a discussion in the section of therapeutics and pharmacology on the kidney and hypertension. The openers will be Prof. Arthur Ellis, Dr. Clifford Wilson, Prof. G. W. Pickering and Dr. Robert Platt. The clinical section will meet at St. Mary's Hospital, Paddington, at 2.15 P.M., on Nov 14. At 3.30 P.M. on the same day Prof. A. J. Ballantyne will read a paper on angiomatosis of the retina to the section of ophthalmology. The section of neurology will hold a clinical and pathological meeting on Nov. 15, at 10.30 A.M., at Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

L.C.C. Vitamin Tests

The London County Council has arranged for tests on the effect of American vitamin capsules to be carried out on 500 elementary school-children, subject to the consent of their parents. One vitamin capsule a day will be given on five days a week for nine months to 125 children selected at random in a reception area and to 300–400 children similarly selected from those attending elementary school in London. An equal number of children will be chosen as controls who will be given capsules with a harmless inactive content.

Hostels for Old Age Pensioners

At a meeting of the old people's welfare committee of the National Council of Social Welfare on Oct. 31, Lord Soulbury, chairman of the Assistance Board, announced that where pensioners did not need continuous medical attention or nursing but needed to have such care at hand the board would make their pension sufficient to enable voluntary organisations to maintain hostels for them. To this end the supplementary pension would be made sufficient to provide the pensioner with an income of 30s. a week.

Medical Aid for China

During their second year's work the China Medical Aid Committee were able to send Dr. Kent, an Austrian surgeon, and Dr. Coutelle, a German physician and physiologist, to China and in November, 1940, they were posted to Red Cross units in Hunan-Hupeh areas. Dr. Rosa Coutelle and Mrs. Maria Kent, a trained nurse, set out to join their husbands in March but owing to enemy action had to return to England. There are now nineteen foreign doctors working in the Red Cross units under Dr. Lim. The units consist of a few trained Chinese first-aid workers and an interpreter. The doctors treat the sick and wounded, perform simple operations, treat fractures, teach hygiene and sanitation, and sort out the wounded to be sent to the base hospital 200 miles away. The press appeal made by the committee in July (*Lancet*, July 5, p. 24) raised £400 and further donations will be welcomed by the treasurer, Dr. E. H. T. Hambly, Treharrock, Seer Green, Bucks.

Prisoners of War

W.S./Captain J. B. Sherman, M.B. Melb., R.A.M.C., and W.S./Captain I. R. I. MacDonald, M.B. Edin., R.A.M.C., have been posted as prisoners of war.

Paddington Medical Society

A meeting of this society will be held at 3.45 P.M., on Nov. 11, at St. Mary's Hospital, when there will be a discussion on how to solve the night-call problem in London.

Chadwick Lecture

Mr. Frederick Hiorns, F.R.I.B.A., will give a Chadwick lecture on Tuesday, Nov. 11, at 2.30 P.M., at the London School of Hygiene, Keppel Street, W.C.1. He will speak on hygiene technique in building, or the economic, psychological and health aspects of surface treatment.

Royal Faculty of Physicians and Surgeons of Glasgow

At the annual meeting of the faculty the following were elected office-bearers for the ensuing year:—president, Mr. Roy Young; visitor, Mr. James MacDonald; treasurer, Mr. William Richard; librarian, Dr. W. R. Snodgrass; other councillors: Mr. J. Scouler Buchanan, Mr. Donald Duff, Dr. John Gardner, Dr. Stanley Graham, Dr. John Henderson, Mr. J. A. C. Macewen, Dr. Donald McIntyre, Dr. Noah Morris, Mr. William A. Sewell, and Mr. J. Forbes Webster.

Alliance of Hospital Administrators

The councils of the Incorporated Association of Hospital Officers (which has hitherto limited its membership to the administrative staffs of voluntary hospitals) and the Incorporated Association of Clerks and Stewards of Mental Hospitals have recommended the fusion of their societies. The new body will open its membership to administrative officers of local-authority and other hospitals, and a committee will be set up to consider the recruitment and training of administrative hospital staff.

Notes, Comments and Abstracts

TO RADIUM SMALLHOLDERS

IN addition to the radium held by hospitals under arrangement with the Radium Commission and King Edward's Hospital Fund there is an appreciable amount in the possession of small hospitals, medical practitioners and commercial firms, and the Minister of Health has now issued a pamphlet instructing these users how to protect their supplies. All radium exceeding 1 mg. in amount should, when not in use, be kept in a bore-hole or steel container of an approved type described in the pamphlet. The bore-hole advised is 50 ft. deep, and otherwise similar to that lately described by Lederman and Mayneord (*Lancet*, 1941, **2**, 461). The container consists of a round or square block of mild steel with a narrow opening leading to a cavity in the centre to hold the radium. The opening is closed by a screw plug. The walls of the container must be not less than 3 in. thick. In a hospital in a vulnerable area not more than 350 mg. should be in use at any one time. Radon should be used instead of radium where possible and the treatment of patients by radium should not continue during an air-raid unless they are in a shelter. If a bomb falls where radium is known to be, the medical officer of health should be at once informed. He will have the area roped off and notify the Ministry of Health, who will arrange for experts to examine the site.

SALAZOPYRIN IN RHEUMATISM

GOOD results are reported by Svartz,[1] in Stockholm, from the use of a compound of sulphapyridine and salicylic acid in rheumatism. She had previously found that though sulphonamides alone were sometimes valuable in septic arthritis they had no effect on the ordinary rheumatic case, but it seemed possible that they might render the responsible organism more sensitive to the action of salicylates. Simultaneous medication with sulphonamides and salicylates was therefore tried, but without effect. Finally, however, Askelöf and Willstædt prepared salicylazosulphapyridine, a preparation which is now produced commercially by Pharmacia of Stockholm under the name Salazopyrin. Svartz reports five cases of rheumatic polyarthritis successfully treated with this drug. One woman of 33 had had polyarthritis since 1933 and when seen could only walk a few steps with difficulty; salazopyrin, 0·5 g. four times daily, was begun on Oct. 29, 1940; by Jan. 31, 1941, movements were almost normal and the patient felt well. Another woman of 44 with arthritis of 1½ years' standing, chiefly affecting the knees and metacarpals, was given several courses of salazopyrin amounting in all to 900 tablets of 0·5 g. each. This lady found herself standing on a chair energetically chasing a moth. The other cases reported are similar, except that one developed a toxic rash after treatment for 10 days with 1 g. six times daily. Svartz also reports four cases of ulcerative colitis in which administration of the drug was followed by complete remission of symptoms. Salazopyrin is only slightly soluble in water, but its alkaline salts dissolve fairly well. Part of it is excreted unchanged in the urine, causing an orange discoloration if the urine is alkaline. It does not give immediate relief of rheumatic pain and it may therefore be necessary to give salicylates with it. The dose recommended for adults is 1 g. four to six times daily, and treatment can be continued for weeks or months. The blood picture should be watched, since mild anæmia was seen in some patients; no serious toxic effects were noted, though the drug had sometimes to be withheld for a time because of a rash.

1. Svartz, N. *Nord. Med.* 1941, **9**, 554; *Ibid*, 1941, **11**, 2261.

BOOKS FROM THE ARGENTINE

IN their new volume on primary malignant tumours of the bronchi and lungs (Buenos Aires: Hachette. Pp. 401), which is the only modern book written in Spanish on this subject, Prof. Julio Palacio and Prof. Egidio Mazzei describe three new clinical pictures associated with pulmonary growths: the osteo-arthropathic, in which hypertrophic osteo-arthropathy is the characteristic sign; the pseudocardiac which produces symptoms resembling angina pectoris, paroxysmal tachycardia or cardiac insufficiency; and a type in which Klumpke-Dejerine paralysis gives a valuable pointer in the diagnosis of carcinoma of the apex of the lungs. Several years ago the authors were awarded the Alvarenga prize of the Paris Academy of Medicine for their work on atelectasis of the lung, and in discussing atelectasis caused by bronchial carcinoma they draw attention to two new signs which they have observed: deviation of the trachea (palpable in the suprasternal notch) during inspiration, in cases of atelectasis of the superior lobe; and the radiological finding of an unusual degree of translucency in the lung adjoining the atelectic lobe.

In his book "Las Neurosis en la Guerra" (Buenos Aires: Aniceto López. Pp. 251) Prof. Gregorio Bermann discusses the place of psychology, psychiatry and psychotherapy in the treatment of people affected by war conditions. During the Spanish civil war Professor Bermann was chief of the section of neurology and psychiatry at the military hospital at Madrid and his book is based on his own clinical experience. Prof. Emilio Mira, who spent some months at the Maudsley before taking up a post in South America, has written a foreword to the book.

WARNER'S CALENDAR OF MEDICAL HISTORY.—Messrs. William R. Warner & Co. did not expect to be able to print further editions of their diary during the war; but they have obtained the authorisation of the paper control to publish a limited number—less than half of last year's edition. The calendar is available only to members of the medical profession, and any doctor who is a regular user or who would like a copy for 1942 should write at once to Messrs. Warner, Power Road, London, W.14.

THE fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Appointments

BOND, K. E., M.B. Camb., F.R.C.S.: temp. surgeon to outpatients at the Hampstead General and North-West London Hospital.

MORLEY, H. S., M.D. Lond., M.R.C.P.: examining factory surgeon for Midhurst, Sussex.

PARKER, ALEXANDRIN, M.B. Edin., D.T.M. & H.: R.M.O. at the East End Maternity Hospital, London.

THOMAS, C. L., M.D. Toronto: R.S.O. at Booth Hall Hospital for Children, Manchester.

TRADE MARK **'MERTHIOLATE'** BRAND

SODIUM ETHYL MERCURI THIOSALICYLATE

'MERTHIOLATE' brand sodium ethyl mercuri thiosalicylate engenders a feeling of security and meticulous discharge of responsibility in the discriminating surgeon as he closes the abdomen or prepares to dress the operative wound in those cases where this antiseptic has been employed.

TINCTURE 'MERTHIOLATE' is an alcohol-acetone-aqueous solution, 1:1,000. Recommended as an effective antiseptic on the intact skin.

SOLUTION 'MERTHIOLATE' is an isotonic aqueous dilution, 1:1,000, which may be used on the most delicate tissues.

Both Tincture 'Merthiolate,' 1:1,000, and Solution 'Merthiolate,' 1:1,000, are available in four-ounce, sixteen-ounce, and one-hundred-twenty-eight-ounce bottles.

ELI LILLY AND COMPANY LIMITED
BASINGSTOKE and LONDON

IN March, 1798, LUKE HOWARD, F.R.S., described in the Press of his day as a "very refpectable Chymist," and founder of the firm of Howards & Sons Ltd., began to manufacture Ether, in addition to other Fine Chemicals. He produced very pure Ether, the quality of which soon became known and the demand for "Howards' Ether" quickly grew.

From these modest beginnings emerged Howards' Standard Ether made in the firm's laboratories at Ilford and used today in famous hospitals and institutions all over the world.

Howards' Standard Ether not only conforms to the requirements of the British Pharmacopœia 1932, but has been made to answer, still more stringent demands in order to afford additional safeguards for its use both at home and abroad.

Made from Pure Ethyl Alcohol, Howards' Standard Ether for Anæsthesia is of the highest degree of purity, with exceptional stability even under adverse conditions. It is packed in special Amber bottles of ¼ lb., ½ lb. and 1 lb., and in Winchesters, and may be obtained from your usual chemist or wholesale house.

HOWARDS & SONS LTD. (Est. 1797) ILFORD

TIP WILL KEEP YOU FIT

THE FILTER

du MAURIER

the perfect cigarette with the exclusive filter tip

IT IS NOW MORE THAN EVER NECESSARY TO EMPTY YOUR PACKET AT THE TIME OF PURCHASE AND LEAVE IT WITH YOUR TOBACCONIST

THE NYLON KNOT

The nylon knot is a slightly modified form of the Surgeon's Knot, which is recommended for nylon sutures. It consists of two hitches, each with a compound knot, thus preventing any possibility of slipping, due to the exceptional smoothness of the material.

Nylon non-absorbable sutures are obtainable from:

Medical Supply Association, Ltd., 167-173 Gray's Inn Road, W.C.1., also at 10-13 Teviot Place, Edinburgh; and 6-12 Holly Street, Sheffield.
John Bell & Croyden, 50 Wigmore Street, W.1.
Allen & Hanburys, Ltd., 48 Wigmore Street, W.1.
Mayer & Phelps, Ltd., 32-34 New Cavendish Street, W.1.
Down Bros., Ltd., Tabard Works, Tabard Street, S.E.1.
C. F. Thackray, Ltd., 252 Regent St., W.1, and Park Street, Leeds, 1.
The Armour Laboratories (Armour & Co. Ltd.), Thornton House, Finsbury Square, E.C.2.
The London Hospital, Ligature Department Annexe, Dunmow Road, Bishop's Stortford, Herts.
Ferris & Co., Ltd., 27 St. Stephen's Street, Bristol, 1.
G. F. Merson, Ltd., St. John's Hill Works, Edinburgh, 8.
Johnson & Johnson (Gt. Britain) Ltd., Slough.
John Clarke & Co. (Successors) Ltd., 8 Donegal Square West, Belfast.
Fannin & Co. Ltd., 41 Grafton St., Dublin.
J. F. Macfarlan & Co., 8 Elstree Way, Boreham Wood, Elstree, Herts; and 109 Abbeyhill, Edinburgh.

I.C.I. (PLASTICS) LTD.

A subsidiary company of Imperial Chemical Industries Limited.

P.N.4

COME TO MAW'S

FOR ALL YOUR MEDICAL AND SURGICAL REQUIREMENTS!

Maw's are actual manufacturers of many of the lines they sell and have a world-wide reputation for fine quality and reliability

DISPENSARY EQUIPMENT AND APPARATUS

SURGICAL AND MEDICAL SUNDRIES OF EVERY KIND

SURGICAL DRESSINGS

SURGICAL APPLIANCES

BELTS, TRUSSES AND ELASTIC HOSIERY

S. MAW, SON & SONS, LTD.

ALDERSGATE HOUSE, NEW BARNET, HERTS

Telephone: Barnet 5555

London Hospital Medical College.

(UNIVERSITY OF LONDON.)

THE HUTCHINSON TRIENNIAL PRIZE. VALUE £60.

The Subject of this Prize is:

THE INVESTIGATION AND TREATMENT OF SCIATIC PAIN.

Candidates must be Full Students of the London Hospital. They may be qualified and eligible to compete until the expiration of ten years from the date of registration as Students of the Hospital.

The Dissertations to be in English, and the number and importance of original facts will be considered principal points of excellence; recited cases to be placed in an appendix.

Every Dissertation to be distinguished by a motto or device; and accompanied by a sealed envelope containing the name and residence of the author, and having on the outside a motto or device corresponding with that on the Dissertation.

The Dissertation to be addressed to the Secretary for the time being of the London Hospital Medical Council, and delivered at the Hospital not later than 4 P.M. on the 31st October, 1944.

Further particulars may be obtained from A. E. CLARK-KENNEDY (Dean), Turner-street, London, E.1.

JENNER INSTITUTE Glycerinated VACCINE LYMPH

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS (BRITISH PRODUCT)

Telephone: BATTERSEA 1347.

SINGLE VACCINATION TUBES - - - 10d. each; 9s. dozen. Postage extra.
LARGE TUBES (EXPORT Only) sufficient for 5 vaccinations, 1s. 6d. each; 15s. dozen

SOLE AGENTS FOR SCLAVO'S ANTI-ANTHRAX SERUM.

Telegrams: "JENVACCIN, PHONE, LONDON" (2 words).

JENNER INSTITUTE FOR CALF LYMPH LTD., 73, Church Road, Battersea, S.W.11.

"An After-Fitting Service to meet changing Aural Conditions"

OUR SERVICE TO DOCTORS AND THEIR DEAF PATIENTS!

IN prescribing "Ardente" for your deaf patients when an aid becomes necessary, you are safe because they can obtain service in most important towns throughout Great Britain—to meet any change in their aural condition. As an additional safety factor, each "Ardente" is covered by its maker's guarantee. There is a full range of "Ardente" types—electrical and non-electrical Bone-Conduction, Granule, Valve and Phantom types—which are individually suited, after Auramoter Test, to the needs of each case—no expense being incurred until hearing satisfactorily.

R. H. Dent
M. Inst. P.I.

Particulars gladly sent and Tests are made at Aurists, Doctors' patients, Hospital, or any of our addresses. Medical Press Reports are interesting. 10 Medals, 5 Diplomas. Supplied under National Health Insurance.

ARDENTE LTD.—309 OXFORD STREET, LONDON, W.1
(Between Oxford Circus and Bond St.) 'Phones: Mayfair 1380/1718/0947

Birmingham Bristol Cardiff Exeter Edinburgh Glasgow Leeds Leicester Manchester Newcastle

British Postgraduate Medical School.

(UNIVERSITY OF LONDON.)

A PRACTICAL COURSE ON
OPERATIVE WAR SURGERY ON THE CADAVER
will be given by
Mr. A. K. HENRY, M.B., M.Ch., F.R.C.S.,
consisting of six sessions.

The course will commence on the 24TH NOVEMBER, 1941, at 2.30 P.M., and be held every afternoon during the week. On Saturday, 29th November, the final session will commence at 10 A.M., and there will be no afternoon session.

The course is strictly limited to twenty students and is intended for Officers. Applications for admission should be made to the DEAN, British Postgraduate Medical School, Ducane-road, W.12.

The fee for the course will be five guineas, but no fee will be charged in the case of Officers of the Armed Forces who submit a leave certificate and register their names before the commencement of the course.

Examining Board in England

BY THE
ROYAL COLLEGE OF PHYSICIANS OF LONDON
AND THE
ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the examinations for the L.R.C.P., M.R.C.S. will begin on the dates stated :—

PRE-MEDICAL EXAMINATION (Chemistry, Physics, and Biology): MONDAY, 1ST DECEMBER. Last date for receiving entries, MONDAY, 10TH NOVEMBER.

FINAL EXAMINATION (Anatomy, Physiology, and Pharmacology): [illegible]

University of Manchester.

EXTRA-MURAL DEPARTMENT.

HEALTH IN THE FACTORY.

Third week-end Course on Factory Medical Services for medical practitioners. (Arranged in collaboration with the Association of Industrial Medical Officers.)

SATURDAY and SUNDAY, 15TH and 16TH NOVEMBER, in the MEDICAL SCHOOL, MANCHESTER UNIVERSITY.

Saturday: Medical records and their interpretation.
Common eye conditions in industry.
Sunday: Skill and clumsiness.
The "young person" in industry.
Health propaganda in the factory.

Fee for the Course—One Guinea.

Further details obtainable from the DIRECTOR OF EXTRA-MURAL STUDIES, The University, Manchester, 13.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, December 8th, 1941, January 12th, February 9th, 1942; MEDICINE, December 15th, 1941, January 19th, February 16th, 1942; MIDWIFERY, December 16th, 1941, January 20th, February 17th, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

STRETTON HOUSE,

Church Stretton, Shropshire.

ESTABLISHED IN 1859.

A PRIVATE HOME for [illegible] treatment of [illegible] Women [illegible]

BRITISH POSTGRADUATE MEDICAL SCHOOL
(UNIVERSITY OF LONDON)

WAR SURGERY OF NERVOUS SYSTEM
10th to 14th November, 1941

Monday, 10th Nov.	10 A.M.	The Surgical Anatomy of the Skull and Brain.	Mr. G. C. Knight, F.R.C.S.
	10.30 A.M.	(*a*) Mechanism and Nature of the Injuries of the Skull.	Mr. G. C. Knight, F.R.C.S.
		(*b*) Mechanism and Nature of the Concomitant Injury to the Brain.	Mr. G. C. Knight, F.R.C.S.
	2 P.M.	Pathology of Wounds of the Nervous System.	Mr. G. C. Knight, F.R.C.S.
Tuesday, 11th Nov.	10 A.M.	(*a*) Closed Injuries of Skull and Brain, Their Complications and Management.	Mr. D. W. C. Northfield, M.S., F.R.C.S.
		(*b*) Immediate Treatment and Management of Wounds of Skull and Brain.	Mr. D. W. C. Northfield, M.S., F.R.C.S.
	2 P.M.	Demonstrations on the Cadaver of Operations on Skull and Brain.	Mr. A. K. Henry, F.R.C.S.
Wednesday, 12th Nov.	10 A.M.	Surgical Sequelæ of Wounds of Skull and Brain.	Mr. G. C. Knight, F.R.C.S.
	12.15 P.M.	Use of X-rays in the Diagnosis of Head Injuries.	Dr. J. Duncan White, M.B., Ch.B., D.M.R.E.
	2 P.M.	Disorders following Head Injuries.	Dr. J. Purdon Martin, M.D., F.R.C.P.
	3.15 P.M.	Hysterical Disorders Associated with War Wounds.	Dr. Aubrey Lewis, M.D., F.R.C.P.
Thursday, 13th Nov.	10 A.M.	Some Sequelæ of War Wounds of Skull and Brain.	Mr. Harvey Jackson, F.R.C.S.
	12 NOON	Demonstration on the Cadaver of Operations on the Spine.	Mr. A. K. Henry, F.R.C.S.
	2 P.M.	War Injuries of the Spinal Cord.	Prof. Lambert Rogers, F.R.C.S., F.A.C.S., F.R.A.C.S.
Friday, 14th Nov.	10 A.M.	Peripheral Nerve Injuries: (1) Diagnosis.	Prof. H. J. Seddon, D.M., F.R.C.S.
	11.30 A.M.	Peripheral Nerve Injuries: (2) Treatment.	Prof. H. J. Seddon, D.M., F.R.C.S.
	2.15 P.M.	Possibilities of Nerve Grafting.	Mr. F. H. Bentley, F.R.C.S.
	3.15 P.M.	Care of Bladder in Injuries of the Nervous System.	Sir Alfred Webb-Johnson, C.B.E., D.S.O., F.R.C.S.

The fee for the Course is one guinea. Officers of the Armed Forces wishing to attend these lectures without payment of the fee should apply through their respective Director-Generals. Applications for admission should be addressed to the DEAN, British Postgraduate Medical School, Ducane-road, W.12.

Further War Surgery Courses will commence as follows:—
OPERATIVE SURGERY IN WARTIME .. 24TH TO 29TH NOVEMBER.
WAR SURGERY OF THE EXTREMITIES .. 15TH TO 19TH DECEMBER.

THE COPPICE, NOTTINGHAM
HOSPITAL FOR MENTAL DISEASES
President: The Right Hon. LORD DELPER

REGISTERED HOSPITAL for Voluntary, Temporary, or Certified PRIVATE PATIENTS of UPPER and MIDDLE CLASSES. Own kitchen garden. Modern forms of treatment, including Electro-shock Therapy. Out-door games, cinema visits, motor drives arranged. Visiting Chaplain.

For terms, &c., apply to: Dr. G. M. WEDDELL, Medical Superintendent. Telephone: 84117 Nottingham.

Telephone: WELbeck 2728 Telegrams: "ASSISTIAMO, LONDON"
For MEDICAL, SURGICAL, and
MENTAL NURSES
Male or Female
THE NURSES' ASSOCIATION
In conjunction with the MALE NURSES' ASSN.
29, YORK ST., BAKER ST., LONDON, W.1
Mrs. MILLICENT HICKS, Superintendent W. J. HICKS, Secretary

ROYAL EARLSWOOD INSTITUTION
REDHILL, SURREY

For MENTAL DEFECTIVES of all ages

Training under medical supervision. Schools, Farm, Trade Workshops, Recreations. Fees £110 to £375 p.a. Election by votes of subscribers at reduced terms for necessitous trainable cases.

Apply, Secretary. Tel.: Redhill 344

FENSTANTON at "FIVE DIAMONDS," Chalfont St. Giles, Bucks
A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2362.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

CHISWICK HOUSE,
PINNER, MIDDLESEX.
Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.
A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.
DOUGLAS MACAULAY, M.D., D.P.M.

THE GROVE HOUSE,
CHURCH STRETTON, SHROPSHIRE.
Private Home for Ladies mentally ill. Voluntary and Temporary Patients received.
Medical Superintendent: Dr. J. A. MCCLINTOCK.

SPRINGFIELD HOUSE
Near BEDFORD
For Mental Cases with or without Certificate